



REGAL®

Luxury Performance Boats

**SPORTBOAT
OWNER'S MANUAL**

200 DESTINY

2300 LSR

2350 LSC

2500 LSR

2550 LSC

2800 LSR

2850 LSC

2460 COMMODORE

RECORD IMPORTANT INFORMATION!

In addition to this manual, your boat may be supplied with component manufacturer information such as instructions, warranties or other important information. Read these materials carefully since improper operation and maintenance can void the warranty and jeopardize personal safety. Fill in the information below and keep a copy of it in a safe place.

Hull

HIN _____

Date Purchased _____

Dealer/Phone _____

Ignition Key Number _____

Registration Number/State _____

Engine

Model # _____

Serial # _____

Trailer

Model # _____

Serial # _____

Accessory 1

Model # _____

Serial # _____

Accessory 2

Model # _____

Serial # _____

Accessory 3

Model # _____

Serial # _____

Table of Contents

| | Page | | Page |
|--|------|----------------------------------|------|
| Introduction | R-1 | Steering | 5-5 |
| 1 Boating Safety | 1-1 | Stopping | 5-5 |
| Boating Regulations | 1-2 | Docking | 5-6 |
| Boat Safety Labels | 1-2 | Boat Trim | 5-7 |
| Boater Responsibilities | 1-2 | Drive Trim Angle | 5-8 |
| Required Safety Equipment | 1-3 | Chemical Toilet | 5-12 |
| Recommended | | Center Windshield Strap | 5-12 |
| Equipment | 1-7 | Garboard Drain Plug | 5-13 |
| Emergencies | 1-8 | Ski Tow Ring | 5-13 |
| Hazardous Conditions | 1-9 | 6 Getting Underway | 6-1 |
| Boating Under the "Influence" | 1-13 | Safety Checklist | 6-1 |
| Carbon Monoxide | 1-13 | Safety Equipment | 6-3 |
| Operation By Minors | 1-14 | Boarding | 6-3 |
| Passenger Safety | 1-15 | 7 Running | 7-1 |
| Water Sports | 1-15 | Maneuvering | |
| General Precautions | 1-16 | Techniques | 7-1 |
| Our Environment | 1-17 | Salt Water | 7-4 |
| 2 Basic Rules | | Freezing Temperatures | 7-4 |
| of the Road | 2-1 | Towing Procedure | 7-4 |
| Aids to Navigation | 2-1 | Anchoring | 7-4 |
| Right-of-Way | 2-6 | Performance Boating | 7-5 |
| 3 Ship Systems | | Propellers | 7-7 |
| Fire Extinguishing "System" | 3-1 | 8 Care and | |
| Exhaust System | 3-2 | Maintenance | 8-1 |
| Lubrication System | 3-2 | Repairs and "Modifications" | 8-1 |
| Electrical Systems | 3-2 | Electrical | 8-1 |
| DC System | 3-2 | Corrosion Protection | 8-4 |
| AC System | 3-4 | General Maintenance | 8-5 |
| Battery Charger/Converter | 3-6 | Fresh Water System | 8-13 |
| AC/DC Electrical Panel | 3-7 | Fuel System | 8-14 |
| DC Panel Breaker Listing | 3-7 | Steering System | 8-15 |
| Wire Color Codes | 3-8 | Maintenance Schedule | 8-16 |
| Fresh Water System | 3-10 | Service Maintenance Log | 8-18 |
| Head and Waste System | 3-11 | 9 Troubleshooting | |
| 4 Controls and Indicators | 4-1 | Fuel System | |
| Shift/Throttle Controls | 4-1 | Diagnostic Chart | 9-1 |
| Switches | 4-2 | Remote Control | |
| Indicators | 4-7 | Diagnostic Chart | 9-2 |
| 5 Operation | 5-1 | Instrument | |
| Fueling | 5-1 | Diagnostic Chart | 9-2 |
| Starting | 5-3 | Performance | |
| Shifting/Running | 5-5 | Diagnostic Chart | 9-2 |

Table of Contents

| | Page | | Page |
|---------------------------|------|----------------------------|------|
| DC Electrical | | 11 Trailering | 11-1 |
| Diagnostic Chart | 9-3 | Classifications | 11-2 |
| AC Electrical | | Hitch | 11-2 |
| Diagnostic Chart | 9-4 | Safety Chains | 11-3 |
| Fresh Water | | Trailer Brakes | 11-4 |
| Diagnostic Chart | 9-5 | Trailer Checklist | 11-4 |
| Waste System | | Backing Up Trailers | 11-6 |
| Diagnostic Chart | 9-6 | Launching | 11-7 |
| 10 Storage | 10-1 | Loading | 11-7 |
| Storage Preparation | 10-1 | 12 Glossary of Terms | 12-1 |
| Slings/Lifting | 10-4 | | |



REGAL[®]

Luxury Performance Boats

Dear Regal Owner,

I know I speak for everyone at Regal when I welcome you to the ever-growing fraternity of Regal boat owners. You've chosen a craft that is recognized worldwide for its standard of excellence. Each step in construction has been carefully scrutinized to assure comfort, performance, reliability and safety for both your passengers and yourself.

Your boat is certified by the National Marine Manufacturers Association. It also complies with the applicable standards set by the United States Coast Guard. Your Regal boat was built with the same attention to detail and quality of construction that we would expect in "a boat we would purchase ourselves.

Whether you're a veteran boater or a newcomer, we strongly urge you to read this boat owner's manual thoroughly. Familiarize yourself with the various components of your boat, and heed the safety precautions noted herein.

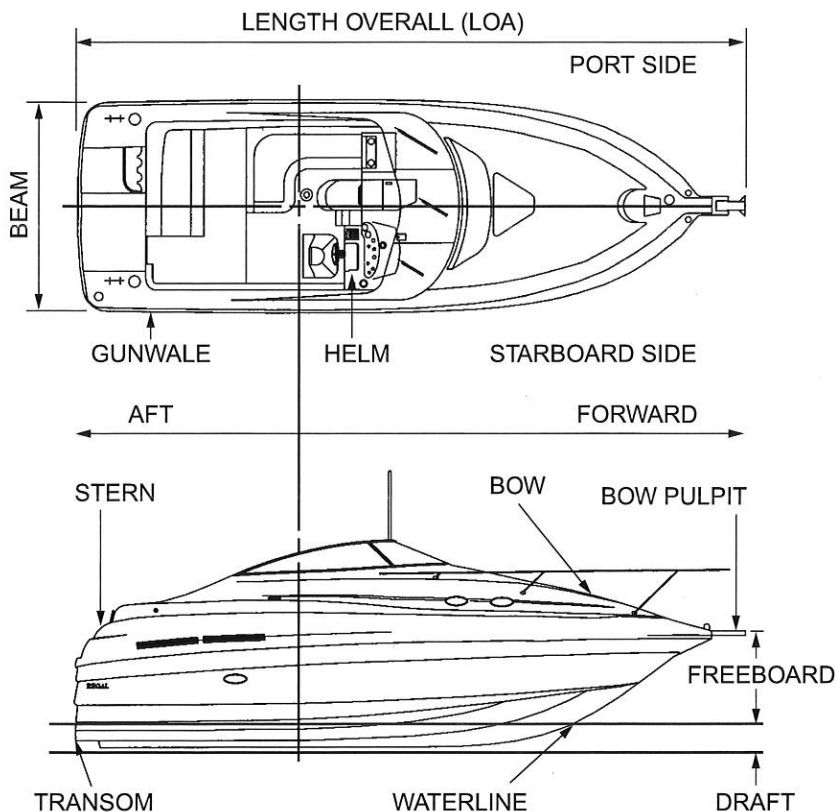
If you have questions that are not covered in this manual, please consult your authorized Regal dealer for assistance or phone the Regal factory at 407-851-4360.

Thank you, and welcome to the "World of Regal!"

*Paul Kuck
Founder*



BOATING TERMINOLOGY



REM-007

YOUR REGAL OWNER'S MANUAL

Your Regal owner's manual has been compiled to help you operate your craft with safety and pleasure. In addition to your Regal owner's manual, we have provided an information pouch aboard the vessel. Become familiar with all the literature found in this pouch as well as your craft before using it. Your Regal dealer has received special factory training on our complete product line and his services should be employed to solve technical problems. Your dealer will be pleased to advise you of local training organizations for safe boating courses.

In keeping with its commitment to continued improvement, Regal notes that all specifications, models, standard and optional equipment are subject to change without notice.

Introduction

GENERAL INFORMATION

Hull Identification Number (HIN)

The United States Coast Guard has established a universal system of numerically identifying vessels by using a hull identification number or "HIN." This number identifies your Regal boat's model, hull number, month and year of manufacture. The HIN is found on the boat's transom. Look for it on the starboard side, just below the rub rail or on the transom platform. Be sure to provide this number to your Regal dealer when ordering parts or service. The HIN consists of 12 alpha or numeric characters.

Dealer's Responsibilities

Your Regal boat has undergone rigid quality assurance inspections before leaving the factory. However, your dealer has been trained to perform final pre-delivery checks and to service your Regal boat prior to your pick-up. Your dealer's responsibilities include:

- A complete orientation in the operation of your Regal boat, including matters relating to the safe operation of your craft.
- Completion and mailing of your Regal boat registration warranty to Regal.
- Warranties, registration materials, operation, installation and maintenance instructions for all auxiliary equipment supplied with or installed on your Regal boat.

Owner's Responsibilities

You are entitled to all the benefits and services outlined in your Regal boat warranty. However, you have certain responsibilities to ensure warranty satisfaction. These are:

- To read the warranty materials and fully understand them.
- To examine the boat in detail at the time of delivery.
- Apply the following: boating rules and regulations, safety equipment, environmental regulations accident reports and warranty regulations, terms and conditions.
- To read thoroughly all literature supplied with your boat, including this owner's manual and to follow the recommendations in the literature.
- To return the boat to the dealer for the proper service inspections.
- To provide proper maintenance and periodic servicing of your boat as set forth in the various manuals supplied.



REGAL
Luxury Performance Boats

SPECIFICATIONS



| SPECIFICATIONS | DESTINY 200 | 2300 LSR | 2350 LSC | 2500 LSR |
|-------------------------------------|---------------------------------|----------------------------------|---------------------------------|----------------------------------|
| Length Overall (I/O) | 20' 1" (6.1 M) | 23' 9" (7.2 M) | 23' 9" (7.2 M) | 24' 10" (7.6 M) |
| Length Overall (O/B) | 22' 3" (6.7 M) | N/A | N/A | N/A |
| Centerline Length | 20' 1" (6.1 M) | 23' 9" (7.2 M) | 23' 9" (7.2 M) | 24' 10" (7.6 M) |
| Beam | 8' 6" (2.5 M) | 8' 6" (2.5 M) | 8' 6" (2.5 M) | 8' 6" (2.5 M) |
| Deadrise | 16 Degrees | 21 Degrees | 21 Degrees | 24 Degrees |
| Approximate Dry Weight | 3400 Lbs (1542 Kg) | 4000 Lbs (1814 Kg) | 4000 Lbs (1814 Kg) | 4640 Lbs (2104 Kg) |
| Bridge Clearance-Top Down | 4' 0" (1.2 M) | 76" (1.9 M) | 76" (1.9 M) | 81" (2.1 M) |
| Draft-Drive Down | 33" (0.8 M) | 36" (0.9 M) | 36" (0.9 M) | 36" (0.9 M) |
| Fuel Capacity | 47 Gals (178 L) | 62 Gals (234 L) | 62 Gals (234 L) | 73 Gals (276 L) |
| Fresh Water Capacity- Optional | 12 Gals (45 L) | 16 Gals (60 L) | 16 Gals (60 L) | 11 Gals (42 L) |
| Maximum Capacity- Persons & Gear | 12 Persons 1700 Lbs (771 Kg) | 10 Persons 2580 Lbs (1170 Kg) | 8 Persons 2580 Lbs (1170 Kg) | 12 Persons 3000 Lbs (1361 Kg) |

All specifications may vary and are subject to change at any time.

| SPECIFICATIONS | 2550 LSC | 2800 LSR | 2850 LSC | 2460 COMMODORE |
|-------------------------------|--------------------|-------------------------|-------------------------|-----------------------|
| Length Overall | 24' 10" (7.6 M) | 27' 6" (8.4 M) | 27' 6" (8.4 M) | 24' 6" (7.5 M) |
| Centerline Length | 24' 10" (7.6 M) | 27' 6" (8.4 M) | 27' 6" (8.4 M) | 24' 6" (7.5 M) |
| Beam | 8' 6" (2.5 M) | 9' 1" (2.7 M) | 9' 1" (2.7 M) | 8' 5" (2.5 M) |
| Deadrise | 24 Degrees | 24 Degrees | 24 Degrees | 18 Degrees |
| Approximate Dry Weight | 4740 Lbs (2150 Kg) | 5800 Lbs (2631 Kg) | 5800 Lbs (2631 Kg) | 5150 Lbs (2336 Kg) |
| Bridge Clearance- Top Down | 81" (2.1 M) | 67" (1.7 M) | 68" (1.7 M) | 7' 0" (2.1 M) |
| Draft-Drive Down | 36" (0.9 M) | 36" (0.9 M) | 34" (0.86 M) | 34" (0.9 M) |
| Fuel Capacity | 73 Gals (276 L) | 97 Gals (367 L) | 97 Gals (367 L) | 68 Gals (257 L) |
| Fresh Water Capacity- | 11 Gals (42 L) | 24 Gals (91L) Optional | 24 Gals (91L) Optional | 16 Gals (61 L) |
| Waste Capacity- | N/A | 12 Gals (45 L) Optional | 12 Gals (45 L) Optional | 12 Gals (45 L) |
| Cabin Headroom | 75" (1.9 M) | | 57" (1.44 M) | 72" (1.8 M) |
| Sleeping Capacity- | 4 | | 2+2 | 4+2 |

All specifications may vary and are subject to change at any time.



WARNING LABEL LOCATIONS

DANGER

CARBON MONOXIDE (CO) IS A TASTELESS, ODORLESS AND INVISIBLE GAS THAT CAN CAUSE DISCOMFORT, SEVERE ILLNESS AND EVEN DEATH. EXERCISE CAUTION WHILE OPERATING GENERATOR OR ENGINES IN CONFINED SPACES OR AT DOCKSIDE. DO NOT ALLOW HULL EXHAUST OUTLETS TO BECOME BLOCKED OR EXHAUST FUMES CAN BECOME TRAPPED IN AND AROUND THE CONFINES OF YOUR BOAT, DURING IDLE AND SLOW CRUISE CONDITIONS, BILGE BLOWERS SHOULD BE USED.

WARNING

GASOLINE VAPORS CAN EXPLODE BEFORE STARTING ENGINE. OPERATE BLOWER 4 MIN. AND CHECK ENGINE COMPARTMENT FOR GASOLINE LEAKS OR VAPORS. RUN BLOWER BELOW CRUISING SPEED.



MAXIMUM CAPACITIES

12 PERSONS OR 1800 LBS

3000 LBS. PERSONS, GEAR

THIS BOAT COMPLIES WITH U.S. COAST GUARD SAFETY STANDARDS IN EFFECT ON THE DATE OF CERTIFICATION
MANUFACTURER: REGAL MARINE INDUSTRIES, INC.
MODEL: 2200 LSR ORLANDO, FL
OTHER COMPLIANCE WITH NOAA REGULATIONS BELOW IS VERIFIED. IMAH RESPONSIBLE FOR PRODUCTION CONTROL
LOAD CAPACITY * COMPARTMENT VENTILATION
STEERING, FUEL AND ELECTRICAL SYSTEMS
NAVIGATION LIGHTS * MANEUVERABILITY
ASSN. NATIONAL MARINE MANUFACTURERS ASSN.

Notice: Ammonia based cleaners and harsh solvents will damage vinyl, Plexiglass and plastic parts.

YACHT CERTIFICATION

DESIGN COMPLIANCE WITH NMMA REQUIREMENTS IN EFFECT ON THE DATE OF CERTIFICATION IS VERIFIED. MANUFACTURER RESPONSIBLE FOR PRODUCTION CONTROL.

NATIONAL MARINE MANUFACTURERS ASSOCIATION
THIS BOAT COMPLIES WITH U.S. COAST GUARD SAFETY STANDARDS IN EFFECT ON THE DATE OF CERTIFICATION
REGAL MARINE IND. ORLANDO, FL

LIFETIME Plus WARRANTY

REGAL
boats



WARNING

TRANSOM DOOR MUST BE CLOSED AND SECURE WHEN ENGINE IS RUNNING

TILT WARNING:
KEEP HANDS &
FEET AWAY
FROM DRIVE
WHEN TILTING

DANGER

STOP ENGINE
BEFORE BOARDING

WARNING

LEAKING FUEL IS A FIRE AND EXPLOSION HAZARD. INSPECT SYSTEM REGULARLY. EXAMINE FUEL SYSTEM FOR LEAKS OR CORROSION AT LEAST ANNUALLY.

Introduction

REGAL MARINE INDUSTRIES, INC. LIFETIME PLUS LIMITED HULL WARRANTY

Welcome to the worldwide family of Regal Owners! We are pleased that you have chosen a Regal powerboat.

This document is your Warranty Registration Certificate and Statement of Warranty. Please check the registration information section for accuracy. If this information is not correct or if you change your address at some future date, please notify us at the following address: Regal Marine Industries, Inc. Attention: Customer Service Department, 2300 Jetport Drive, Orlando, Florida 32809

Please read the warranty carefully. It contains important information of Regal's claims procedures and your rights and obligations under the warranty.

WHAT IS COVERED: This limited warranty applies only to Regal models 17 ft. and larger beginning with model year 1996 boats.

LIFETIME LIMITED STRUCTURAL HULL WARRANTY: Regal Marine Industries, Inc. warrants to the original retail purchaser of this boat that it will, at its sole option, repair or replace the fiberglass hull if it is found to be structurally defective in material or workmanship for as long as the original purchaser owns the boat. For purposes of this warranty, the hull is defined as the single fiberglass casting which rests on the water. This limited warranty is subject to all limitations and conditions explained below.

FIVE-YEAR TRANSFERABLE LIMITED STRUCTURAL HULL WARRANTY: In addition to the Lifetime Limited Structural Hull Warranty, Regal offers a Transferable Five-Year Limited Structural Hull Warranty. Under the five-year transferable limited structural hull warranty, Regal will repair or replace the fiberglass hull if it is found to be structurally defective in material or workmanship within the first (5) years after purchase. The remaining term of this five-year limited hull warranty may be transferred to subsequent owners if within 60 days of purchase, the new owner registers the transfer with Regal and pays the established warranty transfer fee. Contact Regal Customer Service at the above address for details.



FIVE-YEAR LIMITED HULL BLISTER WARRANTY: Regal will Warrant to the original retail purchaser, the underwater gelcoated surfaces of the hull against laminate blisters which occur as a result of defects in material or workmanship within five (5) years of the date of delivery, provided that the original factory gelcoat surface has not been altered. Alteration would include but is not limited to damage repair, excessive sanding, scraping, sandblasting, or from improper surface preparation for application of a marine barrier coating or bottom paint, any of which shall void this warranty. A marine barrier coat must be properly applied to hull bottom if boat is to be moored in water for periods in excess of sixty (60) days. Marine barrier coating is required if boat is to be bottom painted. Regal Marine shall repair or cause to be repaired any covered laminate blisters based on the following prorated schedule.

Less than two (2) years from delivery date - 100%

Two (2) to three (3) years from delivery date - 75%

Three (3) to four (4) years from delivery date - 50%

Four (4) to five (5) years from delivery date - 25%.

Reimbursement shall be limited to one repair, not to exceed Eighty (\$80.00) dollars per foot of boat length prior to proation. Regals prior authorization for the method and cost of repair, must be obtained before repairs are commenced.

LIMITED GENERAL WARRANTY: In addition to above hull warranties, boats manufactured by Regal Marine Industries are warranted to the original purchaser to be free from defects in materials or workmanship for a period of one (1) year from the date of delivery, subject to all limitations and conditions contained herein.

LIMITED EXTERIOR FINISH WARRANTY: Regal warrants its exterior gelcoat finish to be free from cosmetic defects including cracks or crazing for a period of 90 days from the date of delivery to the original retail purchaser, subject to all the limitations and conditions contained herein. All warranty work is to be performed at a Regal dealership or other location authorized by a Regal customer service manager after it is established to Regal's satisfaction that there is a defect in material or workmanship.

CUSTOMER OBLIGATIONS: The following are conditions precedent to the availability of any benefits under these limited warranties:

(a) The purchaser must sign and the dealer must submit to Regal the "OWNER REGISTRATION AND SYSTEMS CHECKLIST form within ten days of the date of delivery and such information must be on file at Regal.

(b) The purchaser must first notify the dealer from whom the boat was purchased of any claim under this warranty within the applicable warranty period and within a reasonable period of time (not to exceed thirty (30) days) after the defect is or should have been discovered.

Introduction

(c) Regal will not be responsible to repair any condition or replace any part, (1) if the use of the boat is continued after the defect is or should have been discovered; and (2) if such continued use causes other or additional damage to the boat or component parts of the boat.

(d) Based on the dealer's knowledge of Regal's warranty policy and / or consultations with Regal, the dealer will accept the claim and arrange for the appropriate repairs to be performed, or deny the claim if not within the warranty period.

(e) The dealer will contact the Regal boat owner regarding instructions for delivery of boat or part for warranty repair if it is covered by the limited warranty. **TRANSPORTATION COST IS THE BOAT OWNER'S RESPONSIBILITY.**

(f) If the Regal boat owner believes a claim has been denied in error or the dealer has performed the warranty work in an unsatisfactory manner, the owner must notify Regal's customer service department in writing at the address listed for further consideration. Regal will then review the claim and take appropriate follow-up action.

WARRANTY EXCEPTIONS: This Limited Warranty does not cover and the following are not warranted:

(a) Engines, metal plating or finishes, windshield breakage, leakage, fading and deterioration of paints, canvas, upholstery and fabrics.

(b) Gelcoat surfaces including, but not limited to, cracking, crazing, discoloration or blistering except as noted above.

(c) Accessories and item which were not part of the boat when shipped from the Regal factory, and or any damage caused thereby.

(d) Damage caused by misuse, accident, galvanic corrosion, negligence, lack of proper maintenance, or improper trailering.

(e) Any boat used for racing, or used for rental or commercial purposes.

(f) Any boat operated contrary to any instructions furnished by Regal, or operated in violation of any federal, state, Coast Guard or government agency laws, rules, or regulations.

(g) The limited warranty is void if alterations have been made to the boat.

(h) Transportation of boat or parts to and/or from the Regal factory or service location.

(i) Travel time or haul outs, loss of time or convenience.

(j) Any published or announced catalog performance characteristics of speed, fuel and oil consumption, and static or dynamic transportation in the water.



(k) Any boat powered beyond Regal's power recommendations.

(l) Boats damaged by accident and boats damaged while being loaded onto, transported upon or unloaded from trailers, cradles, or other devices used to place boats in water, remove boats from water or store or transport boats on or over land.

(m) Water damage to, dry rot to, condensation to or absorption by interior surfaces, wood structures or polyurethane foam; interior wood including, but not limited to, bleeding and/or discoloration as a result of condensation or moisture or water continually contacting the plywood causing staining to upholstery, carpet or other interior surfaces.

(n) Costs or charges derived from inconveniences or loss of use, commercial or monetary loss due to time loss, and any other special, incidental or consequential damage of any kind or nature whatsoever.

GENERAL PROVISIONS: ALL GENERAL, SPECIAL, INDIRECT, INCIDENTAL AND/CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM THIS WARRANTY AND ARE TOTALLY DISCLAIMED BY REGAL. It is the interest of the parties that the owner's sole remedy is the repair or replacement of the vessel or its allegedly defective component parts and that no other legal or equitable remedies shall be available to said owner. Some states do not allow the exclusion of incidental or consequential damages so the foregoing may not apply to you. THIS IS A LIMITED WARRANTY; REGAL MAKES NO WARRANTY, OTHER THAN CONTAINED HEREIN; ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARISING IN STATE LAW IS LIMITED TO THE PERIOD OF THIS LIMITED WARRANTY. ALL OBLIGATIONS OF REGAL ARE SPECIFICALLY SET FORTH HEREIN. REGAL DOES NOT AUTHORIZE ANY PERSON OR DEALER TO ASSUME ANY LIABILITY IN CONNECTION WITH REGAL BOATS.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Regal's obligation with respect to this warranty is limited to making repairs to or replacing the defective parts and no claim for breach of warranty shall be cause for cancellation or rescission of the contract or sale for any boat manufactured by Regal Marine Industries, Inc. "Regal will discharge its obligations under this warranty as rapidly as possible, but cannot guarantee any specific completion date due to the different nature of claims which may be made and services which are required. Regal reserves the right to change or improve the design of its boats without obligation to modify any boat previously manufactured. This limited warranty gives you specific legal rights, and you may also have other rights which may vary from state to state. Regal shall in no way be responsible for any repairs not PRE - AUTHORIZED by a Regal customer service manager or repairs performed by a repair shop not PRE - AUTHORIZED by a customer service manager.



Chapter 1

Boating Safety

The popularity of boating and other water sports has undergone an explosion of growth in the past few years. Because of this, safety is an important issue for everyone who shares in the use of our waterways.

This section covers general boating safety information. Throughout this manual specific precautions and symbols identify safety related information.

 The Safety Alert Symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

DANGER

Indicates the presence of a hazard which **WILL** cause **SEVERE** injury, death or substantial property damage.

WARNING

Indicates the presence of a hazard which **CAN** cause **SEVERE** injury, death or substantial property damage.

CAUTION

Indicates the presence of a hazard which **WILL** or **CAN** cause **MINOR** or **MODERATE** personal injury or property damage.

NOTICE

Indicates installation, operation or maintenance information which is important but not hazard-related.

The precautions listed in this manual and on the boat are not all-inclusive. If a procedure, method, tool or part is not specifically recommended, you must satisfy yourself that it is safe for you and others, and that the boat will not be damaged or made unsafe as a result of your decision. **REMEMBER – ALWAYS USE COMMON SENSE WHEN OPERATING YOUR BOAT!**



BOATING REGULATIONS

The U.S. Coast Guard is the authority of the waterways; they are there to help the boating public. State boating regulations are enforced by local authorities. You are subject to marine traffic laws and “Rules of the Road” for both federal and state waterways; you must stop if signaled to do so by enforcement officers, and permit to be boarded if asked.

There are many pamphlets, prepared by the Coast Guard, available to you. These pamphlets explain “Rules of the Road”, signal lights, buoys, safety, international and inland regulations and much more than is presented in this manual. For more information contact your local U.S. Coast Guard Unit or call the Coast Guard Customer Infoline at 1-800-368-5647.

BOAT SAFETY LABELS

Your boat is affixed with various safety labels at the time of manufacture. These labels appear at specific locations on the craft where safety is of particular concern. Safety labels must remain legible. If you suspect a label is missing or one becomes damaged, contact your dealer for immediate replacement.

BOATER RESPONSIBILITIES

Registration

The U.S. Coast Guard requires that all power boats operated on the navigable waters of the United States must be registered in the state of main use; also, many States require registration in that state whenever boating on waters within their state boundary. Always contact your state boating authorities (and neighboring states) for registration information on boats and trailers. Your dealer can supply you with the appropriate forms.

Education

This manual is not intended to provide complete training on all aspects of boat operation. We strongly recommend that all operators of this boat seek additional training on boat handling and safety. Some states require youths 16 years of age and younger to complete a boating safety course before operating any watercraft. Many others require operators under the age of 18 to be licensed in small boat operation.

The following is a listing of some of the agencies and organizations that offer safety training or information. To find boating safety courses in your area, call your state’s local boating agency or the Coast Guard boating safety CourseLine at 1-800-336-2628 (1-800-245-2628 in Virginia).

- American Red Cross
- U.S. Coast Guard Auxiliary
- U.S. Power Squadrons
- State Boating Offices

Boating Safety

Insurance

You must get insurance before operating your new boat. Loss by fire, theft or other causes, or liability protection against accidents is a must for responsible boaters. The boat owner is legally responsible for any damage or injury caused when he, or someone else operating the boat, is involved in an accident. Many states have laws detailing minimum insurance needs. Your insurance agent or your dealer may be able to supply you with more information.

REQUIRED SAFETY EQUIPMENT

Your boat has been equipped at the factory with most federally required Class 1 [4.8 m (16 ft.) to less than 7.9 m (26 ft.)] safety equipment. **As the owner, it is your responsibility to obtain other mandatory safety equipment not provided by the boat manufacturer, and to ensure all equipment is kept in good, serviceable condition.**

| MINIMUM REQUIRED SAFETY EQUIPMENT | | | |
|---|---|---|---|
| EQUIPMENT | CLASS 1 (16 to less than 26 ft.) (4.9 to less than 7.9 m) | CLASS 2 (26 to less than 40 ft.) (7.9 to less than 12.2 m) | CLASS 3 (40 to not more than 65 ft.) (12.2 to not more than 19.8 m) |
| PERSONAL FLOTATION DEVICES (PFDs) | One approved Type I, II, III or V (if used according to Coast Guard requirements) device aboard for each person on board or being towed on water skis, etc.; and, in addition, one throwable Type IV device. | | |
| FIRE EXTINGUISHER Must say Coast Guard Approved. | At least one B-I type approved hand portable fire extinguisher (Not required on outboard motorboats less than 26 feet in length and not carrying passengers for hire if the construction of such motorboats will not permit entrapment of explosive or flammable gasses or vapors and if fuel tanks are not permanently installed.) | At least two B-I type approved portable fire extinguishers; OR at least one B-II type approved portable fire extinguisher. | At least three B-I type approved portable fire extinguishers; OR at least one B-I type plus one B-II type approved portable fire extinguisher. |
| VISUAL DISTRESS SIGNALS (Required on coastal waters only.) | Orange flag with black square-and-disk (day); and an S-O-S electric light (night); or three orange smoke signals, hand held or floating (day); or three red flares of hand held, meteor, or parachute type (day/night). | | |
| BELL, WHISTLE | Every vessel less than 12 meters (39.4 ft.) in length must carry an efficient sound producing device. | Every vessel 12 meters (39.4 ft.) but less than 20 meters (65.6 ft.) in length must carry a whistle and a bell. The whistle must be audible for 1/2 nautical mile. The mouth of the bell must be at least 200 mm (7.87 inches) in diameter. | |



Chapter 1

NOTICE

Many state equipment requirements go beyond Coast Guard requirements. Contact your state boating office for further information.

Equipment requirements for coastal and inland waters differ. Check with local authorities or the Coast Guard for further information about coastal water requirements.

Personal Floatation Devices

Federal law also requires at least one Type I, II, III or V Personal Floatation Device (PFD) for each person on board or being towed, and at least one Type IV throwable PFD in the boat.

PFDs are intended to help save lives. Therefore, you and your passengers should wear a PFD whenever boating. It is especially important that children and non-swimmers wear a PFD at all times. Make certain all passengers know how to put on and properly adjust their PFDs. Also, selecting the proper type PFD for your kind of outing helps ensure your time on the water can be the safest possible. There are four types of PFDs to wear and one type used for throwing in emergency situations.

Boating Safety



TYPE I
LIFE PRESERVERS
KC-0041

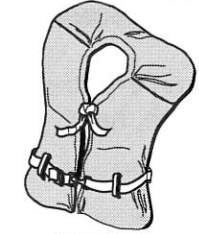
Type I: Most buoyant PFD and effective on all waters, especially open, rough water.

Type II: Good for calm water near shore on most inland waters where quick rescue is likely.

Type III: Good for most inland water applications where quick rescue is likely. Come in various styles and some are designed for watersport activities.

Type IV: Intended for heavy traffic inland waters where help is always available. Designed to be thrown to a person in the water and should never be worn.

Type V: Inflatable design for special use activities and may be used instead of a Type I, II, or III PFD if used in accordance with the approval conditions on the label *and if worn when the boat is underway*. Some Type V PFDs provide increased protection against hypothermia.



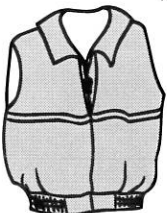
TYPE II
BUOYANT VESTS
KC-0051



TYPE III
FLOTATION AIDS
KC-0042



TYPE IV
THROWABLE DEVICES
KC-0071



TYPE V HYBRID PFD
MUST BE WORN
WHEN UNDERWAY

NOTICE

- If a Type V PFD is to be counted toward the minimum carriage requirements, it must be worn.
- Special PFDs are available for skiing and other watersports. These PFDs are constructed with materials suitable for high impact falls.

Keep the following PFD points in mind:

- Set an example and wear your PFD. Require your passengers to wear them also.
- Make sure the PFD fits properly; this is especially important for children and non-swimmers.
- At the beginning of each season, check PFDs for damage and test for proper flotation.



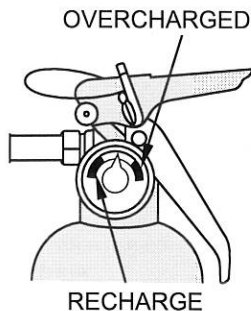
Chapter 1

Fire Extinguisher

U.S. Coast Guard approved fire extinguishers are generally required on all Class I-III boats. Extinguishers should be mounted in readily accessible areas away from the engine compartment and alcohol stove (if equipped). All passengers should know the location and operating procedure of each extinguisher.

Any marine fire extinguisher must be classified to extinguish type B fires (gasoline, oil, or grease).


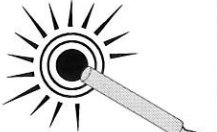


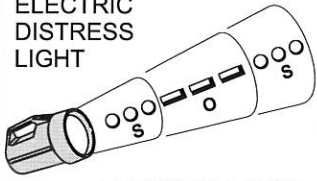
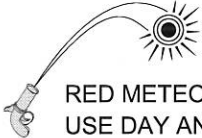

The size and number of required fire extinguishers depend on the size of your boat. Check pressure gauge regularly for proper pressure; have extinguisher filled if necessary.



KC-0083

Visual Distress Signals

Federal law also requires boats 4.8 m (16 ft.) and longer to carry day and night visual distress signals when operating on coastal waters, the Great Lakes, territorial seas or those waters directly connected to them, up to a point where the body of water is less than two miles wide. Carry several types of signaling devices to handle a variety of conditions.

| | |
|--|---|
|  <p>ORANGE FLAG</p> <p>USE DAY ONLY</p> | <p>RED DISTRESS FLARE (HAND)</p>  <p>USE DAY AND NIGHT</p> |
|  <p>ARMS SIGNALS (USE BRIGHT CLOTH)</p> <p>USE DAY ONLY</p> | <p>USE DAY ONLY</p>  <p>ORANGE SMOKE SIGNAL (HAND)</p> |
| <p>ELECTRIC DISTRESS LIGHT</p>  <p>USE NIGHT ONLY</p> |  <p>RED METEOR FLARE</p> <p>USE DAY AND NIGHT</p> |
| <p>DYE MARKER</p>  <p>USE DAY ONLY</p> | <p>USE NIGHT ONLY</p> |

KC-0082

Boating Safety



WARNING

Pyrotechnic signaling devices can cause injury and property damage if improperly handled. Follow the manufacturer's directions.

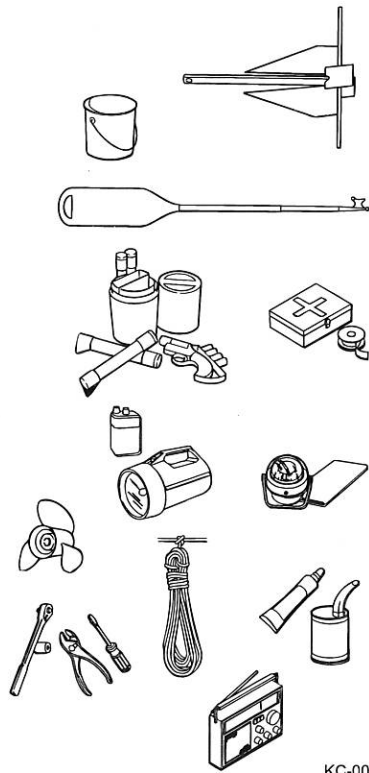
NOTICE

- Some pyrotechnics are restricted from use on certain bodies of water, so always check with local authorities.
- All signaling devices must be in serviceable condition, readily accessible, and in compliance with Coast Guard requirements.

RECOMMENDED EQUIPMENT

As a precaution, a good boater will avoid potential problems on an outing by having additional equipment on board. Normally, this equipment is dependent on the body of water and the length of the trip, your dealer can assist you:

- First aid kit and manual
- Anchor with sufficient line
- Mooring lines and fenders
- Bailing device (bucket, hand pump, etc.)
- Combination oar/boat hook
- Day/night visual distress signals
- Lubricant
- Tool kit
- Spare propeller, nut and washer
- Spare fuses and bulbs
- Local charts and compass
- Waterproof flashlight
- Portable AM/FM radio with weather band
- Spare flashlight and radio batteries
- Sunglasses and sun block
- Tow line
- Parallel ruler and dividers
- Emergency Position Indicating Radio Beacon (EPIRB)
- Spare keys
- Binoculars
- Spare fuel
- Food and water provisions
- Auxiliary starting battery





EMERGENCIES

Be prepared to deal with emergencies before they happen. Try to formulate a plan for each type in advance so that decisions can be made quickly and without hesitation. Precious moments lost can mean the difference between losing and saving a life.

Reporting Accidents

The U.S. Coast Guard requires the owner or operator of a boat involved in an accident to report the incident to the proper marine law enforcement agency for the State in which the accident occurred. Immediate notification to the nearest State boating authority is required if a person dies or disappears as a result of a recreational boating accident. If a person dies or injuries requiring more than first aid are involved, a formal report must be filed within 48 hours of the accident. A formal report must be filed within 10 days for accidents exceeding \$500 in property damage or complete loss of boat.

Giving Assistance

If you see a distress signal or suspect a boat is in trouble, you must assume it is a real emergency and render assistance immediately. By law, the operator in charge of the craft is obligated to provide assistance to any individual in danger if such assistance can be provided safely. Failure to render assistance can result in a fine and/or imprisonment.

The 1971 Boating Safety Act grants protection to a “Good Samaritan” boater providing good faith assistance, and absolves a boater from any civil liability arising from such assistance.

Fires

Most fires are the result of gasoline and oil accumulating in the bilge from careless fueling practices. Use the fire extinguisher at the base of the flames using a “sweeping motion. Prudent and accurate use of the available chemicals should contain all but the worst fires. Verify that the fire has been extinguished. If so, check damage and get assistance immediately. If not, get out and swim at least 23 meters (25 yards) upwind from the boat and use the visual distress signals to get assistance.



Boating Safety

On board fires involving the fuel system usually result in either an explosion that completely destroys the boat, or the boat burning to the waterline and self extinguishing. Deciding on abandoning the boat or staying to fight the fire is difficult and depends on many factors. Try to formulate a fire plan in advance to make that decision quickly and without hesitation.



WARNING

Gasoline will float on top of water and can burn. If the boat is abandoned, swim up wind, far enough to avoid fuel that may spread over the surface of the water to avoid serious injury.

Capsizing and Swamping

A boat may capsize or swamp when least expected. Like fires, try to formulate a plan in advance on what to do if it should happen. Keep in mind the following guidelines:

- Try to turn the engine "OFF" to prevent damage.
- If others were on board, try to locate them, make sure they're conscious and that they can swim.
- **STAY WITH-THE-BOAT, IT-WILL-FLOAT!** Climb up on the hull and try to get assistance.
- Don't try to swim to shore. It's usually further than it looks.



KC-0170

HAZARDOUS CONDITIONS

Every waterway poses hazards that you should avoid; shallow water, tree stumps, sand bars, etc. Ask local boaters for information and consult a marine chart when boating on unfamiliar waters. As the operator of the boat, you should try to avoid all hazards, known and unknown. The following information does not contain all possible water hazards.



Chapter 1

Weather

Getting caught in severe weather is hazardous. Check with local weather stations, the U.S. Coast Guard, or Weather service broadcasts (162.55 or 162.40 Megahertz) for the latest conditions. It is recommended to check the weather not only before but periodically while you are boating.

Storms – Take common sense precautions if you are forced to operate your boat in stormy conditions:

- Wear PFDs
- Stow gear below and lash equipment on deck.
- Reduce speed and head for place of refuge you can reach most easily.
- If you lose power, keep boat headed into the waves by rigging a sea anchor off the bow.

Fog – It is best to avoid operating your boat in foggy weather. When fog sets in take bearings and log courses and speeds. You are required to emit a five second blast from your horn or whistle once every minute. Additionally, have passengers wear PFDs and observe for oncoming vessels.

Dam Spillways

The water around a dam spillway is a hazardous area. It is subject to rapid changes. Boaters must keep clear of the spillway areas below dams.

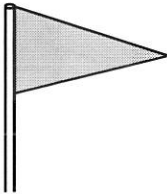
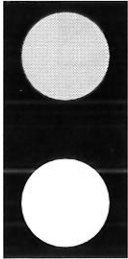
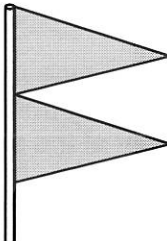
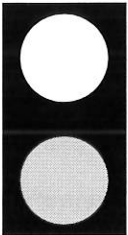
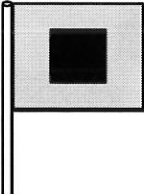
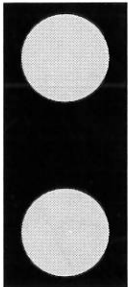
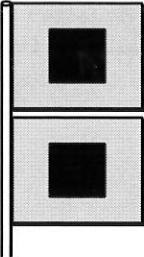

Shallow Water Operation

Operating in shallow water presents a number of hazards. If the engine strikes an underwater hazard, check for boat and engine damage. If the engine vibrates excessively after striking an underwater obstruction, it may indicate a damaged propeller.

Sand bars in narrow inlets are constantly shifting, making it difficult to mark them with buoys. Sometimes, sand bars are indicated by waves as they form into breakers when passing over the sand bar. If you ground the boat on a sand bar, seek help from another boater or radio for help.

In coastal areas, tides can affect water level as much as 9 m (30 ft.) Check with local marinas or Coast Guard stations for tide tables and current charts.

Boating Safety

| DAYTIME WARNING | DESCRIPTION | NIGHTTIME WARNING |
|---|---|---|
|  | <p>Small Craft Advisory - Winds greater than 18 knots, sustained for two hours or more or hazardous wave conditions. Following a storm, hazardous wave conditions can persist long after the high winds have subsided.</p> |  |
|  | <p>Gale Warning - Sustained winds (2 or more hours), of 34-47 knots.</p> |  |
|  | <p>Storm Warning - Sustained winds of 48 knots or greater.</p> |  |
|  | <p>Hurricane Warning - Forecast winds of 64 knots and above. Displayed only in connection with a hurricane.</p> |  |

 Actual Signal in red

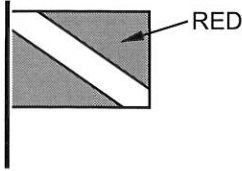
KC-0371



Chapter 1

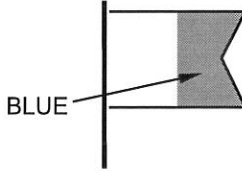
Warning Markers

DIVERS FLAG



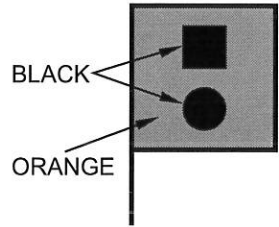
USED BY
RECREATIONAL
DIVERS -
INDICATES
DIVER'S
POSITION

ALPHA FLAG



WORLDWIDE VESSELS
ENGAGED IN DIVING
OPERATIONS - DOES
NOT INDICATE
DIVER'S POSITION

DISTRESS FLAG



INDICATES
FELLOW
BOATER IS IN
NEED OF
ASSISTANCE

KC-0352

It is a good idea to ask local authorities if there are hazardous areas and how they are marked. Boaters must also recognize the flag designs which indicate that skin divers are present and keep well clear of the area.

Watch for swimmers. Swimming areas may not be marked. Steer clear from the area and always remain alert.



KC-0260



KC-0250

Navigation markers serve as a means of identifying navigable routes, and indicate water hazards. Boaters should become familiar with navigation markers and stay within marked boundaries and clear of hazards.

Boating Safety

BOATING UNDER THE INFLUENCE



WARNING

Federal and state laws prohibit operating a boat under the influence of alcohol and other drugs. These regulations are actively enforced. Impaired operation may result in severe personal injury or death.

Boating, alcohol and the use of other drugs just doesn't mix. These substances reduce your reaction time and affect your better judgment. Combined with the sun, wind, waves, and noise of other watercraft, the effects of drugs are increased and will significantly reduce your reaction time. As the owner/operator, you are responsible for the alcohol/drug use and on-board behavior of your passengers.



KC-0153

NOTICE

If the operator's blood alcohol content is 0.10% (0.08% in some states) or above, violators are subject to a civil penalty up to \$1,000 or criminal penalty up to \$5,000, one year imprisonment or both. Operating a boat under the influence can also result in a loss of motor vehicle driving privileges.

CARBON MONOXIDE

Carbon Monoxide (CO) is a colorless and odorless gas produced by all engines and fuel burning appliances. Even with the best boat design and construction, plus the utmost care in inspection, operation, and maintenance, hazardous levels of CO may still be present in accommodation spaces under certain conditions. To reduce CO accumulation, always ventilate the boat interior by opening the deck hatches, windows or canvas to provide adequate ventilation.



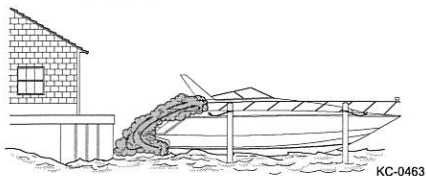
KC-5032



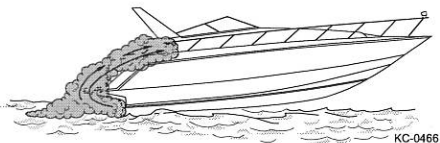
! DANGER **!**

EXTREME HAZARD – Carbon monoxide gas (CO) is colorless, odorless and extremely dangerous. All engines and fuel burning appliances produce CO as exhaust. Direct and prolonged exposure to CO will cause BRAIN DAMAGE or DEATH. Signs of exposure to CO include nausea, dizziness and drowsiness. Sources of CO include:

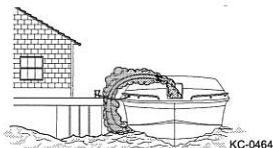
- 1** Blockage of boat exhausts by obstruction.



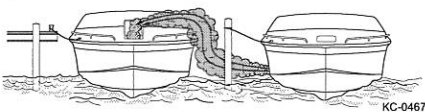
- 4** Operating with high bow angle.



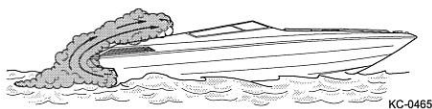
- 2** Exhausts traveling along obstruction.



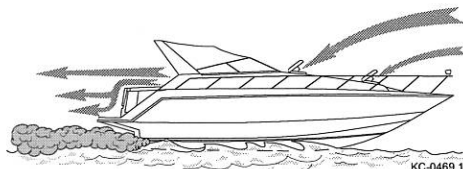
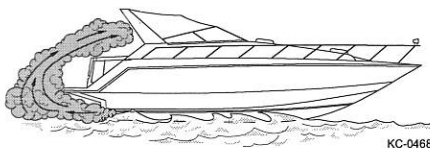
- 5** Exhausts from other vessels in confined areas.



- 3** Operating at slow speed or while dead in the water.



- 6** Operating with canvas tops and side curtains in place without ventilation.



ENSURE ADEQUATE VENTILATION FOR CORRECT AIR MOVEMENT THROUGH BOAT!

OPERATION BY MINORS

Minors must always be supervised by an adult whenever operating a boat. Many states have laws regarding the minimum age and licensing requirements of minors. Be sure to contact the state boating authorities for information.

Boating Safety

PASSENGER SAFETY

Whenever you are going for an outing, make sure that at least one passenger is familiar with the operation and safety aspects of the boat in case of emergency. Show all passengers the location of emergency equipment and explain how to use it. Don't allow passengers to drag their feet or hands in the water, or sit on the bow, bow pulpit, deck, or gunwale while the engine is running.

WATER SPORTS

Larger boats produce a wake too big for skiers. Only boats that are equipped with a ski-tow eye should be used to pull water skiers.

NOTICE

It is unlawful to participate in water sports while under the influence of alcohol or other drugs.

When participating in water sports, be safe and courteous and follow these guidelines:

- Be considerate to fishermen and others you share the water with.
- Do not perform water sports in congested areas.
- Stay away from navigation markers.
- Stay away from other boats and water sports participants.
- Return immediately to a fallen water sport participant.
- Regularly inspect water sport equipment to ensure it is safe.

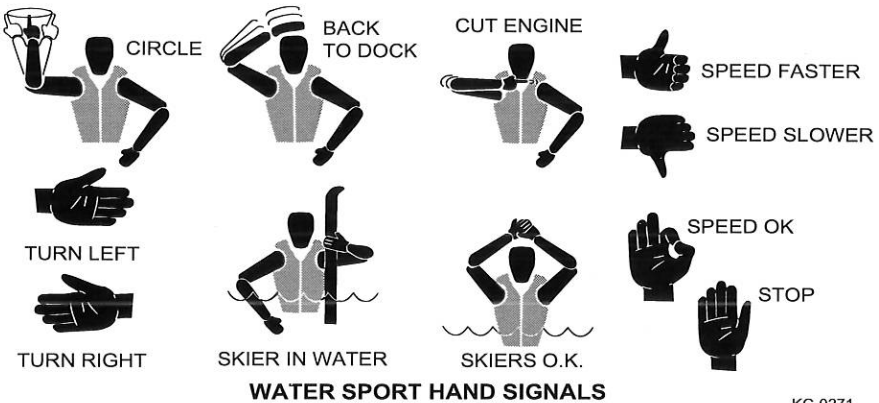


WARNING

- **Water sport participants must wear a USCG approved flotation device. A type III water ski vest is an approved and practical PFD.**
- **Keep at least 30 m (100 ft.) away from all other objects.**
- **When water sporting have an experienced driver and aft facing observer in the boat.**
- **Never water sport in shallow water or at night.**
- **Never jump from a moving boat.**
- **Always keep a downed water sporter in sight.**
- **Turn the motor OFF before you get close to someone in the water.**



Chapter 1



KC-0271

GENERAL PRECAUTIONS

Your safety, the safety of your passengers, and other boaters are among your responsibilities as operator of this boat. Your boat must be in compliance with U.S. Coast Guard safety equipment regulations. You should know how to react correctly to adverse weather conditions, have good navigation skills, and follow the “rules of the road” as defined by the Coast Guard and state/county/local regulations.



WARNING

Read and understand this manual and the engine manual, and be sure that you understand all controls and operating instructions before attempting to operate the boat. Improper operation can be extremely hazardous.

Before each outing you should check all safety equipment, such as fire extinguishers, PFDs, flares, distress flags, flashlights, engine stop switch, etc. They should be operable, in good condition, readily visible, and easily accessed.

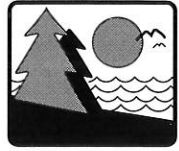
Tell someone of your travel plans. Check local weather reports before casting off; do not leave the dock area when strong winds and electrical storms are in the area or predicted to be in the area.

Know the weight capacity of your boat. Do not overload your boat.

Boating Safety

OUR ENVIRONMENT

As a boater, you already appreciate nature's beauty and the peace of the great outdoors. It is a boater's responsibility to protect the natural environment by keeping waterways clean.



Don't put anything in the water you wouldn't want to eat or drink!

Conserve Fishery Resources

There is a tremendous drain on our fishery resources. Over-fishing and pollution have strained the fish population. Do your part by keeping only what you will eat by practicing catch-and-release.

Foreign Species

If you trailer your boat from lake to lake, you may unknowingly introduce a foreign aquatic species from one lake to the next. Thoroughly clean the boat below the water line, remove all weeds and algae, and drain the bilge and livewells before launching the boat in a new body of water.

Fuel and Oil Spillage

The spilling of fuel or oil into our waterways contaminates the environment and is dangerous to wildlife. Never discharge or dispose fuel or oil into the water; it is prohibited and you could be fined. There are two common, accidental types of discharge:

- Overfilling the fuel tank
- Pumping contaminated bilge water



WARNING

Fumes from rags can collect in bilge and be extremely hazardous. Never store rags used to wipe-up fuel or solvent spills in the boat. Dispose of rags properly ashore.

Discharge and Disposal of Waste

Waste means all forms of garbage, plastics, recyclables, food, wood, detergents, sewerage and even fish parts in certain waters - in short, nearly everything. We recommend you bring back everything you take out with you for proper disposal ashore.



Chapter 1

If you have a marine sanitation device (head or marine toilet) installed, use an approved pump-out facility at your marina. Many areas prohibit the discharge of sewerage overboard or even an operable overboard waste discharge.

Excessive Noise

Noise means engine noise, radio noise or even yelling. Many bodies of water have adopted noise limits. Don't use thru-transom exhaust unless you're well off shore. Music and loud conversation can carry a considerable distance on water, especially at night.

Wake and Wash

Be alert for NO WAKE zones. You may be responsible for any damage or injury caused by your wake/wash. Prior to entering a NO WAKE zone, come off plane to the slowest steerable speed.

Exhaust Emissions

Increased exhaust (hydrocarbon) emissions pollute our water and air. Keep your engine tuned and boat hull clean for peak performance. Consult your dealer and engine manual for information.

Paints

If your boat is kept in water where marine growth is a problem, the use of anti-fouling paint may reduce the growth rate. Be aware of environmental regulations that may govern your paint choice. Contact your local boating authorities for information.

Cleaning Agents

Household cleaners should be used sparingly and not discharged into waterways. Never mix cleaners and be sure to use plenty of ventilation in enclosed areas. DO NOT use products which contain phosphates, chlorine, solvents, non-biodegradable or petroleum based products. Citrus based cleaners are excellent for marine cleaning purposes and are safe for you and the environment. Refer to MAINTENANCE for more information.

Chapter 2

Basic Rules of the Road



WARNING

The nautical rules of the road be followed to prevent collisions between vessels. Like traffic laws for automobiles, the operator is legally required to follow the rules.

The following information outlines only the most basic of the nautical rules of the road. For more information, contact your local U.S. Coast Guard Auxiliary.

AIDS TO NAVIGATION

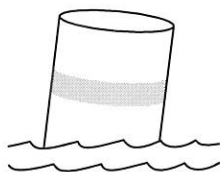
Learn to recognize the different buoys and day markers; they are the signposts of the waterway. There are 2 primary marking systems in use in the U.S.; the Uniform State Waterway Marking System (USWMS) used on inland waters and maintained by each state, and the Federal Waterway Marking System (FWMS) used on coastal waters and rivers and maintained by the U.S. Coast Guard (USCG). In addition, the FWMS has two modified systems; Western River Buoyage, and Intracoastal Waterway Buoyage. Be sure to check with local authorities on the buoyage system in use.

The only buoys you are permitted to moor to are mooring buoys. Mooring to a navigation buoy or other navigational aid or regulatory marker is illegal.

The type of hazard/warning buoys and markers depends on the area of jurisdiction. Check with local boating authorities.

USWMS System

In the USWMS Lateral System, well defined channels are marked with red and black buoys. Lateral means the sides of the channel are marked and the boat should pass between them



**MOORING
BUOY**

WHITE WITH BLUE BAND

MAY SHOW WHITE
REFLECTOR OR LIGHT



Chapter 2

The USWMS Cardinal System is used when there is no well defined channel or where an obstruction may be approached from more than one direction. With the cardinal system:

- Pass north or east of BLACK-TOPPED WHITE buoy.
- Pass south or west of RED-TOPPED WHITE buoy.
- RED and WHITE VERTICALLY STRIPED buoy indicates boat should pass outside of the buoy (away from shore).

Uniform State Regulatory Markers

USWMS regulatory markers are white with international orange geometric shapes; you must obey regulatory markers.

UNIFORM STATE WATERWAY MARKING SYSTEM (USWMS)



CONTROLLED
AREA



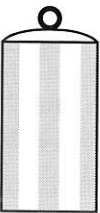
DANGER



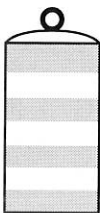
BOATS
KEEP OUT



INFORMATION



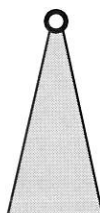
DO NOT PASS
BETWEEN SHORE
AND BUOY



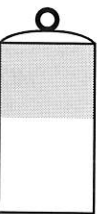
SPECIAL
PURPOSE



NAVIGATE TO
STARBOARD
FACING UPSTREAM



NAVIGATE TO
PORT FACING
UPSTREAM



NAVIGATE TO
SOUTH OR WEST



NAVIGATE TO
NORTH OR EAST



MID-CHANNEL

Basic Rules of the Road

FWMS System

The FWMS Lateral System is for use on navigable waters except Western Rivers and Intracoastal Waterways.

The markings on these buoys are oriented from the perspective of being entered from seaward (the boater is going towards the port). This means that red buoys are passed on the starboard (right) side of the vessel when proceeding from open water into port, and green buoys to the port (left) side.

The right side (starboard) of the channel is marked with RED, even numbered buoys. The left (port) side of the channel is marked with GREEN, odd numbered buoys.

The middle of the channel is marked with RED and WHITE vertically striped buoys; pass close to these buoys.

Obstructions, channel junctions, etc. are marked with RED and GREEN horizontally striped buoys.

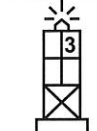
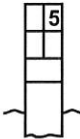

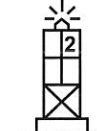
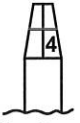

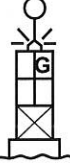


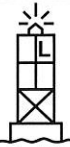
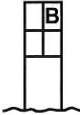

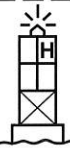
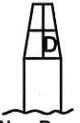

A RED band at the top means the preferred channel is to the left of the buoy; a GREEN top band means the preferred channel is to the right of the buoy.

Day markers are colored and numbered the same as buoys. RED, triangular day markers with even numbers mark the starboard side of the channel. GREEN, square day markers with odd numbers mark the port side of the channel.

Lights, bells and horns are used on buoys for night or poor visibility conditions. Buoys with unique light flashing characteristics are identified on nautical charts with the specific flashing pattern.



Chapter 2

| Federal Waterways Marking System (FWMS) | | | | |
|--|--|--|---|--|
| Lateral Aids Marking the Sides of Channels as seen When Entering From Seaward | Port Side Odd Numbers (Green) |  Lighted Buoy (Green Light) |  Can Buoy |  Daymark |
| | Starboard Side Even Numbers (Red) |  Lighted Buoy (Red Light) |  Nun Buoy |  Daymark |
| Safe Water Aids Marking Mid-Channels and Fairways (No Numbers—May be Lettered) | (Red) |  Lighted (White Light) |  Spherical Buoy |  Daymark |
| Preferred Channel Aids (No Numbers—May be Lettered) | Preferred Channel to Starboard (Green and Red) |  Lighted Buoy (Green Light) |  Can Buoy |  Daymark |
| | Preferred Channel to Port (Green and Red) |  Lighted Buoy (Red Light) |  Nun Buoy |  Daymark |

KC-0441

Light Structures

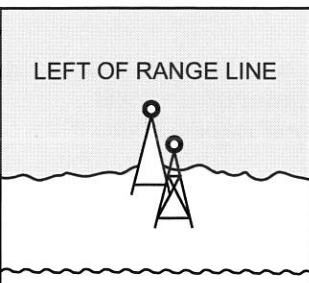
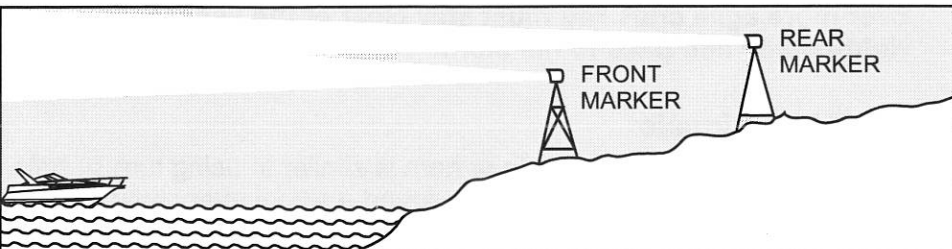
Maneuvering a boat at night can be dangerous and confusing. To aid boaters with navigation and warn of hazards, the U.S. Coast Guard and state and local authorities maintain a variety of light structures. Some light structures may be equipped with radio beacons, radar reflectors, and/or fog signals.

Minor Lights – are colored according to the buoyage marking system in use. They are similar to lighted buoys, except they are usually higher and on more stable platforms to increase visibility. Most minor lights are part of a series to mark a channel, river, or harbor.

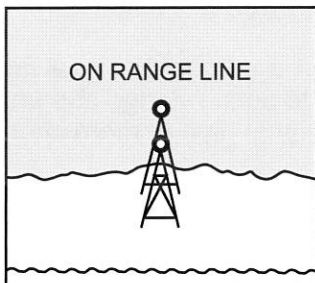
Basic Rules of the Road

Range Lights – are usually visible in one direction and help a boat operator navigate in a generally safe direction. Steering a course to keep range lights arranged in a line (one on top of the other) will help guide a boat through a channel.

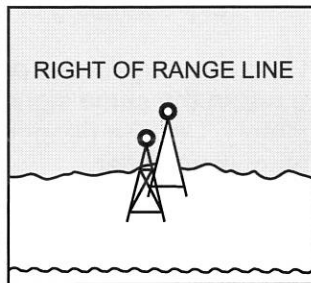
RANGE LIGHTS



LEFT OF RANGE LINE

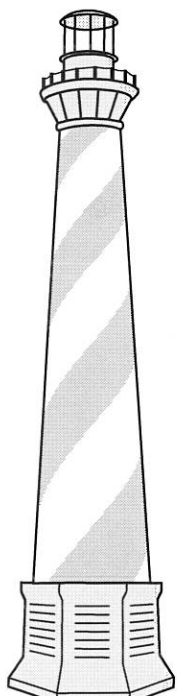
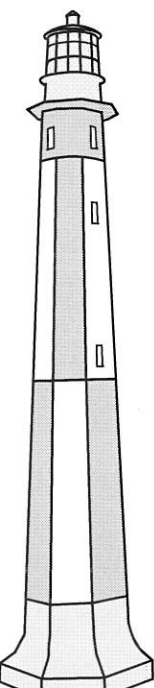


ON RANGE LINE



RIGHT OF RANGE LINE

KC-0442



Lighthouses – can be found at harbor entrances, prominent headlands, isolated danger areas, and along the coasts. These striped or patterned structures have unique flashing characteristics to help identify them.



RIGHT-OF-WAY

NOTICE

In general, boats with less maneuverability have right-of-way over more agile craft. You must stay clear of the vessel with right-of-way and pass to his stern.

Whistle/Horn Signals

Signaling other boats with a whistle or horn is similar to using turn signals on an automobile. It is not necessary to sound a signal every time a boat is nearby. In general, boat operators should signal their intention to avoid potentially confusing or hazardous situations.

It is customary for the privileged boat to signal first, and the give-way boat to return the same signal to acknowledge she understands and will comply. Use the danger signal (five or more short and rapid blasts) if intent is not clear.

Use the following signal blasts early enough to be noticed and understood by other boaters:

- One long blast: Warning signal (coming out of slip or passing astern)
- One short blast: Pass on my port side
- Two short blasts: Pass on my starboard side
- Three short blasts: Engines in reverse
- Five or more short and rapid blasts: Danger Signal!

Basic Rules of the Road

Privileged Boats

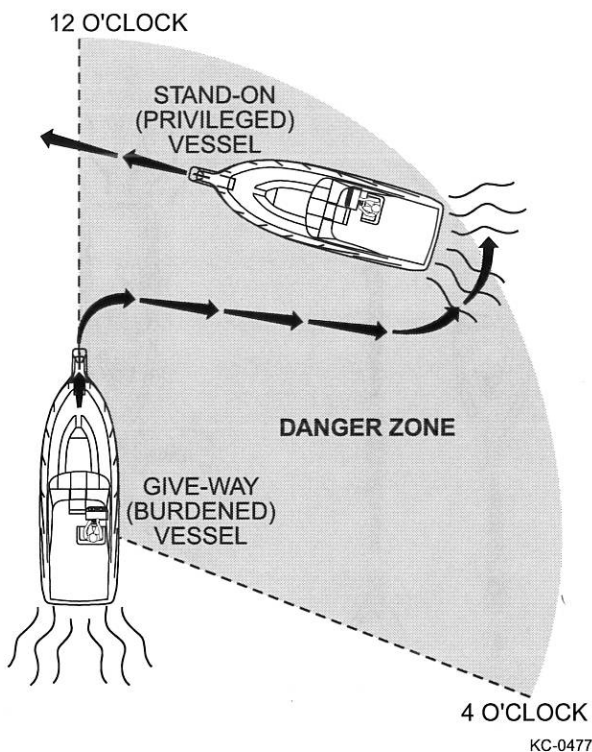
Privileged boats have right-of-way and can hold course and speed. Sailboats and boats paddled or rowed have the right-of-way over motor boats. Sailboats under power are considered motorboats. Small pleasure craft must yield to large commercial boats in narrow channels.

Burdened Boats

The burdened boat is the boat that must make whatever adjustments to course and speed necessary to keep out of the way of the privileged boat.

Crossing Situation

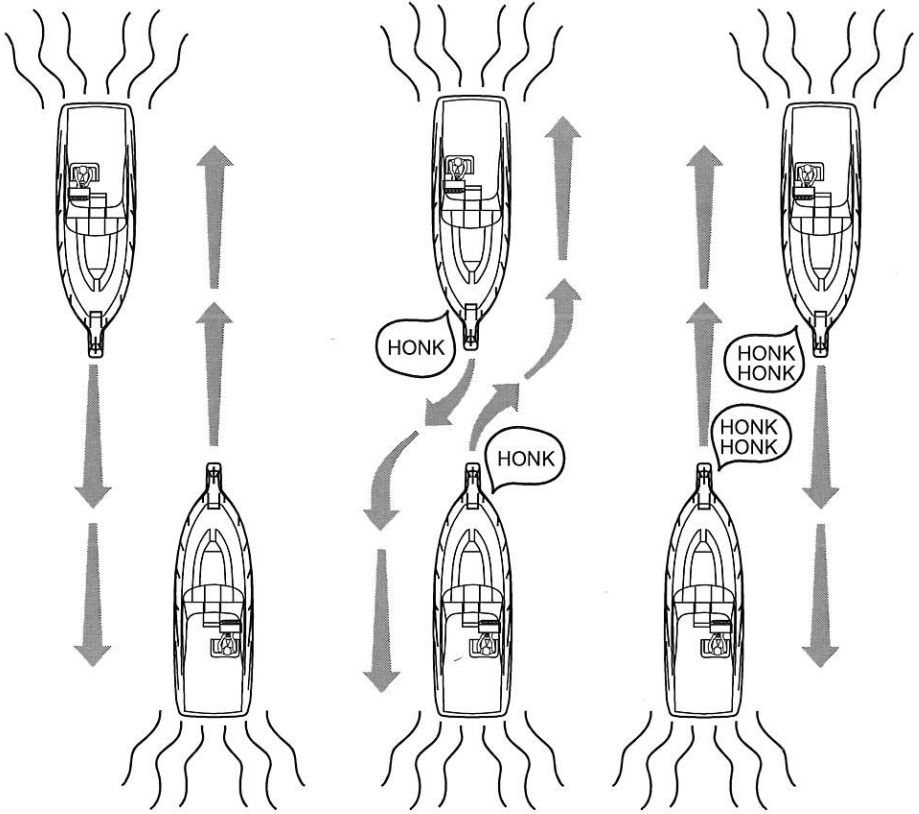
In crossing situations, the boat to the right from the 12 o'clock to the 4 o'clock position has the right-of-way. It must hold course and speed. The burdened boat keeps clear and passes behind the privileged boat. Boats going up and down a river have the privilege over boats crossing the river.





Meeting Head-On

Neither boat has the right-of-way in this situation. Both boats should decrease speed, should turn to the right, and pass port-to-port. However, if both boats are on the left side of a channel, each vessel should sound two short horn blasts and pass starboard to starboard.



PASSING
PORT TO
PORT

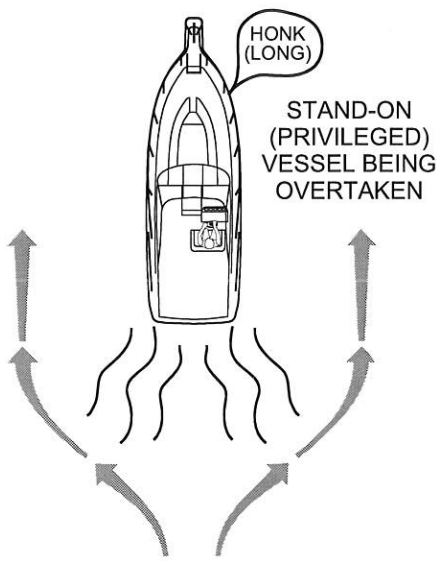
MEETING
HEAD TO
HEAD

PASSING
STARBOARD TO
STARBOARD

Basic Rules of the Road

Overtaking

The boat that is overtaking one ahead of it is the give-way boat and must make any adjustments necessary to keep out of the way of the stand-on boat. The stand-on boat should hold its course and speed.



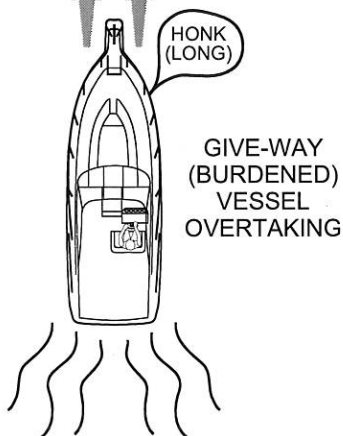
The General Prudential Rule

The general prudential rule regarding right-of-way is that if a collision appears unavoidable, neither boat has right-of-way. As prescribed in the Rules of the Road, both boats must act to avoid collision.

Night Running

Boats operating between sunset and sunrise (hours vary by state) must use navigational lights. Nighttime operation, especially during bad weather or fog can be dangerous. All Rules of the Road apply at night, but it is best to slow down and stay clear of all boats, regardless of who has right-of-way.

Protect your night vision by avoiding bright lights and have a passenger, if possible, help keep watch for other boats, water hazards, and aids to navigation.



KC-0476

The size, speed, and direction of other vessels are determined at night from the running lights. A green light indicates the starboard side of the boat, and a red light indicates the port side. Generally, if you see a green light, you have the right-of-way; if you see a red light, give-way to vessel.

Chapter 3

Systems, Controls and Indicators



Your boat is equipped with a variety of major systems to operate the craft and provide the conveniences you expect while on the water. This section describes the basic operational principles of these systems. The procedures and illustrations in this section are representative of typical ship systems. Be sure to read and understand all information provided with your particular boat before operating its systems.



WARNING

Regularly inspect and maintain all systems to prevent unexpected hazards associated with worn or faulty components. Always replace system components and hardware with marine grade parts, not automotive components.

FIRE EXTINGUISHING SYSTEM

Models equipped with an Automatic Fire Extinguishing System automatically actuate when temperatures reach a preset limit. When actuation occurs, a loud popping sound may be heard followed by a “rushing” air sound. When a discharge occurs, immediately shut down all electrical and mechanical systems and powered ventilation.



KC-5040



WARNING

If the fire system discharges, wait for at least 15 minutes before opening engine hatch. Fire system gas displaces oxygen to “smother” the fire. Opening the hatch too soon may feed oxygen to the fire and flashback can occur.



EXHAUST SYSTEM

The engine exhaust system removes the gases produced by the running engine and helps to vent them away from the boat. Some stern drives are equipped with an exhaust diverter valve which, when activated, routes engine exhaust down through the propeller hub. Never change or modify the standard factory exhaust system. Refer to your engine manual for more information.

LUBRICATION SYSTEM

Like automobiles, most cruiser gasoline and diesel engines and gear transmissions use a pressurized continuous loop lubrication system that must be periodically serviced in accordance with the manufacturer's recommendations. Electrical transducer units mounted on the engine and transmission provide oil pressure signals to gauges at the helm. Full oil pressure must be available for proper lubrication, so monitoring the gauges is important, especially when operating at cruising speeds and above.

ELECTRICAL SYSTEMS



WARNING

Considerable care has been taken to design safe electrical systems that protect you from hazardous shocks. Any modifications to the AC/DC system should always be done by a qualified technician.

Regal boats may be equipped with two electrical systems: a battery powered direct current (DC) system, and/or a shore powered alternating current (AC) system. These systems have a load center panel which serves as the main distribution panel. The AC system is available only on the 2460 and 2850.

The DC system supplies electricity to all of the boat's electrical circuits (lights, pumps, blowers, ignition, etc.)

The AC system supplies power to the electrical outlets, and to the AC powered systems (electric stove, water heater, microwave, refrigerator, etc.) when the boat is moored to dock or slip.

DC SYSTEM

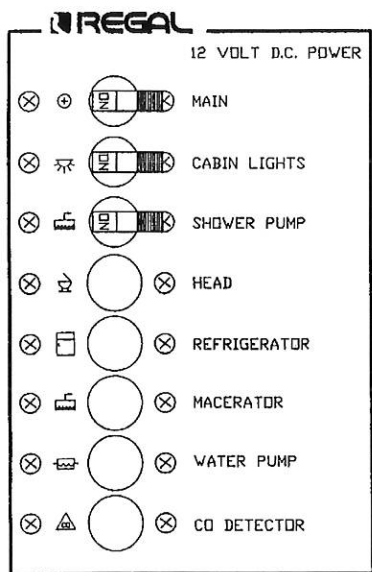
Your boat has a 12 volt negative ground DC system. The positive wire is hot, and feeds current from the batteries to the various 12 volt systems.

Systems, Controls & Indicators

The main 12 volt power supply wires are colored red. The negative wire is called the ground. The 12 volt negative wires are colored black. For more information refer to the wire color code pages in this section.

While the engines are running, all batteries are charged by the engine alternator(s) with the battery switch in the "ON" position. The rate of charge is controlled by an internal voltage regulator.

The electrical system is grounded by connecting a negative wire to the engine(s) and to the cranking batteries. This provides added assurance that a proper ground is achieved. The distribution panel contains the DC main breaker and equipment sub breakers. Refer to the DC breaker listing in this section for more information.



REM-008

TYPICAL DC MAIN

The distribution panel contains the DC main breaker and main equipment sub breakers. Switch type circuit breakers serve a twofold function: they allow you to manually enable or interrupt a circuit by moving the switch on or off, and they protect the system receiving the DC current (power) by automatically opening the circuit if a short or overload condition occurs. The resettable circuit breakers protect the system receiving DC power by automatically opening the circuit if a short or overload occurs. Refer to your engine manual for the engine main breaker location. In the event of a electric malfunction, refer to the troubleshooting information located in chapter 9. For further information contact a marine technical person or your Regal dealer.

CAUTION

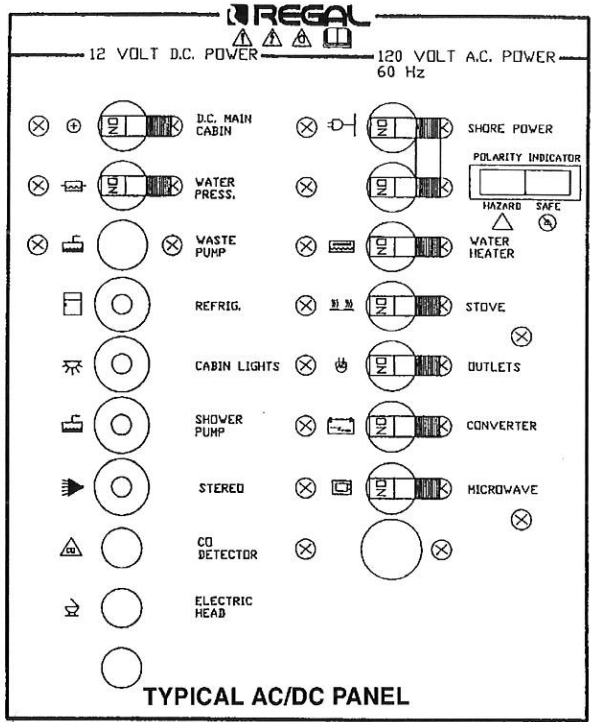
Never reset a circuit breaker which has been automatically tripped without first detecting and correcting the cause of the problem. Contact a marine professional or your Regal dealer for further information.



AC SYSTEM

The AC electrical system allows for dockside hookup to an AC shore power station for running air conditioning and other appliances.

AC shore power systems are rated for 125 volts at 60 cycles. Source current is provided by a 120 volt, 60 cycle shore power station. The wiring for the AC system is much like that in your home. The 120 volt hot wire (black) sends current to the AC system. The neutral wire (always white) sends current back to the source, and ground wire (always green) grounds all systems to a common ground of the vessel.



REM-009

The AC portion of the AC/DC panel consists of the following components:

Reversed Polarity Indicator - Indicates if the shoreside power source has been reversed, but will not indicate if the boat polarity is reversed.



WARNING

If a reversed polarity warning is indicated, DO NOT USE the shore power source. Immediately turn off the power source on shore and disconnect the shore power cord. Reversed polarity is a dangerous and potentially lethal condition which many cause shock, electrocution, or death.

Main AC Breaker - Switches the entire AC system "ON" and "OFF." This breaker shuts the AC power "OFF" between the main panel, all sub breakers and equipment. This is identified by the double pole type switch.

Systems, Controls & Indicators

Individual Breaker Switches - Allow you to manually enable or interrupt a circuit by flipping the switch, "ON" or "OFF," and they also protect the system receiving the AC load by automatically breaking the circuit in cases of shorts or overloads.

CAUTION

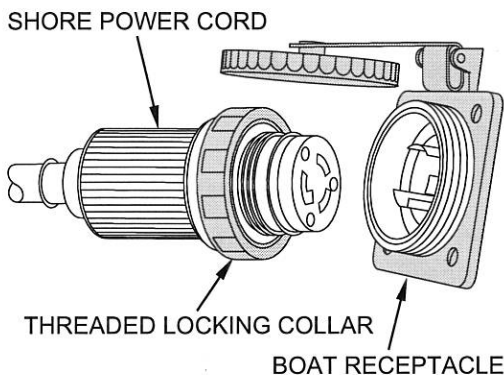
Never reset a breaker which has automatically tripped without first detecting and correcting the cause of the problem.

Shore Power Light - Indicates that shore power is being received by the AC control panel. The light will glow in the safe area under the polarity indicator. The light signals correct voltage for equipment usage.

Shore Power Connection

One 125 volt receptacle is provided for the shore power inlet. The type of receptacle determines the amperage rating of the system. Regal uses a 30 amp system.

All shore power systems require a special, marine grade three-conductor cable to make a proper connection to the shore. Dockside connections are plug-in while boat side connectors plug-in and are locked in position with a threaded collar to prevent accidental disconnection and enhance water resistance.



BOAT SIDE SHORE POWER CONNECTION

KC-2053



WARNING

Plugs and receptacles for different systems are designed in noninterchangeable configurations. A plug from one system cannot fit into the receptacle of another system. Never attempt to modify a shore power cable; use only commercially available adapters for system modification.



Chapter 3

To minimize shock and fire hazards when connecting and disconnecting shore cord:

To connect:

1. Turn "OFF" the boat's main AC breaker switch.
2. If the outlet on the pier has a disconnect switch, turn the switch in the "OFF" position.
3. Connect the shore power cable at the boat first.
4. Make sure the cable has more slack than the mooring lines.
5. Remove the cap from the outlet on the pier. Connect the other end of shore cable to the pier outlet.
6. If polarity indicator is activated, immediately disconnect cable.
7. Set the shore disconnect switch in the "ON" position.

To disconnect:

1. Turn the shore power ship's panel switch to the "OFF" position.
2. If there is a disconnect switch on the shore, set the switch to the "OFF" position.
3. Disconnect shore power cable at the shore outlet first.
4. Disconnect the power cable from the inlet in the boat. Replace the cap over the inlet.
5. Store shore power cable in a dry locker for future use.

BATTERY CHARGER/CONVERTER

Regal boats with the optional 120 volt dockside power option include a battery charger/converter located in the engine room. It's function is to keep the engine batteries fully charged to ensure prompt starts. The battery charger/converter operates on 120 volt AC current. The charger/converter breaker switch located on the main ship's AC/DC panel must be in the "ON" position for the charger/converter to operate. Refer to your owner's information pouch for more information.

Systems, Controls & Indicators

AC/DC ELECTRICAL PANEL

DC BREAKER LISTING

| SWITCH | AMPS | COMPONENT |
|------------------------|------|---------------------|
| CO Detectors (Fuse) | 1 | Cabin CO Detectors |
| DC Cabin Main | 50 | Entire DC Panel |
| Electric Head (Option) | 25 | Elec/Vacuflush Head |
| Cabin Lights | 10 | Main Cabin Lights |
| Refrigerator | 10 | DC Refrigerator |
| Shower Pump (Fuse) | 5 | Shower Sump Pump |
| Stereo | 10 | Stereo System |
| Water Pressure | 15 | Fresh Water Pump |
| Waste Pump (Macerator) | 20 | Macerator Pump |

**Refer to the AC/DC panel illustration*

AC BREAKER LISTING

| SWITCH | AMPS | | COMPONENT |
|-------------------|------|------|------------------|
| | 120V | 220V | |
| Charger/Converter | 5 | 5 | Converter |
| Microwave | 10 | 7.5 | Oven |
| Outlets | 10 | 7.5 | A/C Receptacles |
| Shore Power (2) | 30 | 16 | Dockside Power |
| Stove | 15 | 10 | Galley Stove |
| Water Heater | 15 | 10 | Hot Water Heater |

**Refer to the AC/DC panel illustration*

DC PANEL BREAKER LISTING

| SWITCH | AMPS | COMPONENT |
|------------------------|------|-----------------------|
| Main | 50 | Controls Entire Panel |
| Cabin Lights | 10 | Main Cabin Lights |
| Shower Pump | 5 | Shower Sump Pump |
| Electric Head (Option) | 25 | Elec/Vacuflush Toilet |
| Refrigerator | 10 | DC Refrigerator |
| Macerator (Waste Pump) | 20 | Macerator Pump |
| Water Pump | 15 | Fresh Water Pump |
| CO Detector (Fuse) | 1 | Cabin CO Detectors |

**Refer to the DC Panel Illustration*



WIRE COLOR CODES

| Color | Gauge | Function |
|-----------------------|--------------|---------------------------|
| Red | 2 | Battery Genset Cable |
| Red | 00 | Battery Engine Cable |
| Black | 16 To 2 | All Grounds |
| Black/White | 16 | Halon Fire Ext. |
| Brown | 12 | Water Pressure Pump |
| Brown | 16 | Aft Bilge Pump |
| Brown/Blue | 16 | Forward Bilge Pump |
| Brown/Black | 16 | Shower Sump Pump |
| Brown/Black (Waste) | 10 | Macerator Pump |
| Brown/White (Fwd/Aft) | 16 | Auto Bilge Pump |
| Brown/Pink | 16 | Co Detector |
| Yellow | 12 | Blower |
| Red/Black | 16 | Stereo Positive Power (+) |
| Orange | 10 | Electric Head |
| Orange | 10 | Refrigerator |
| Orange | 16 | Windshield Wiper Run |
| Orange/White | 16 | Windshield Wiper Park |
| Orange/Black | 12 | Horn |
| Blue | 14 | Interior Lights |
| Blue/White | 14 | Cockpit Lights |
| Blue/Black | 16 | Cockpit Soft Lights |
| Blue/Red | 16 | Engine Room Lights |
| Blue/Green | 16 | Interior Soft Lights |
| Blue/Yellow | 16 | Arch Lights |

Systems, Controls & Indicators

WIRE COLOR CODES (CONT'D)

| Color | Gauge | Function |
|--------------|--------------|---------------------------|
| Blue/White | 16 | Transom Courtesy Lights |
| Gray | 16 | Bow Navigation Lights |
| Gray | 16 | Transom Navigation Light |
| Gray/White | 16 | Mast Light (Fwd. Nav) |
| Gray/Black | 16 | Mast Light (Anchor Light) |
| Red/Black | 16 | Windlass (Up) |
| Red/White | 16 | Windlass (Down) |
| Red | 00/2 | 12 Volt DC Panel Feed |
| Red | 2/4 | Instrument Panel Feed |
| Red | 00/2 | Windlass Main Feed |
| Red | 10 | Hatch Ram |
| Yellow/Black | 16 | Stereo Memory |
| Red | 16 | VHF Radio |
| Red | 16 | Gas Vapor Detector |
| Red | 16 | Depth Sounder |
| Red | 16 | GPS |
| Red | 12 | Radar |
| Red/White | 14 | Battery Parallel |
| Purple | 16 | Hour Meter |
| Green | 8 | Bonding |
| Green | 16 | Tank Level Monitor |
| Green | 10 | Spotlight |
| Pink | 16 | Fuel Sender |



FRESH WATER SYSTEM

The fresh water system provides potable (drinkable) water to items such as sinks, showers, hot water heater and transom shower washdowns. Regal uses a pressurized water pump to supply fresh water to the various components.

With the DC breaker “ON” the pressure pump will force fresh water to the faucet selected or to other components such as the shower. There is a removable in-line filter located at the pressure pump. Be sure to remove this filter and periodically clean the screen. If necessary, replace the screen where “hard” water uses exist. The pump features a pressure valve switch to deliver a continuous flow of water pressure. This switch is factory set and requires no periodic maintenance.

All fresh water system drainage is directed overboard unless you have a gray water system. Then all drainage travels to a holding tank pump out system.

Initial Fresh Water System Startup

1. Fill the fresh water tank with approximately 10 gallons of potable water.
2. Turn the fresh water pressure breaker “ON.”
3. Open the cold water galley faucet to allow air to escape. Close the faucet when a steady flow of water is apparent.
4. Open the hot water galley faucet to fill the water heater and allow air to escape from the line. Close the faucet when a steady flow of water is apparent.
5. Bleed air from the remainder of the faucets, showers, etc., in the same manner as steps 3 and 4. After all lines have been bled, the pump will build to operating pressure and then shut off.
6. At this point continue to fill the tank until full.
7. Check for leaks.

CAUTION

The fresh water pump works on demand and WILL NOT automatically shut-off when the tank is empty. If the breaker switch is in the “ON” position, and the tank is empty, the pump will run continuously and may overheat.

Systems, Controls & Indicators

Hot Water Heater (Option on Select Models)

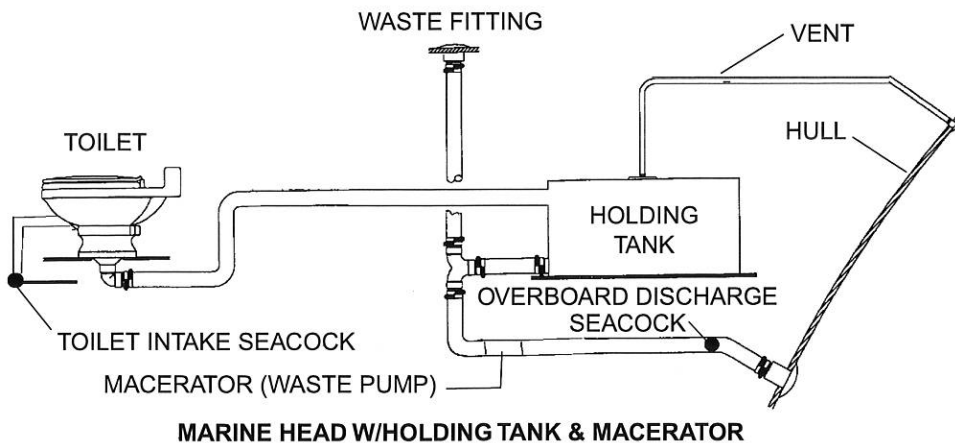
The hot water heater is equipped with a high pressure relief valve for safety. Regal models use a thermostat to regulate the water temperature. The thermostat is adjustable to suit individual taste. Refer to the owner's information pouch for additional information. The electric hot water heater is operated by turning "ON" the water heater breaker located at AC/DC panel.

The hot water tank also operates through a heat exchanger. Heated cooling water from the engines is delivered to a heat exchanger which in turn heats the water in the hot water tank.

HEAD AND WASTE SYSTEM

Some Regal boats are equipped with a head (toilet) and waste containment system. Several types of heads are installed as standard and optional equipment depending on the Regal boat model. Refer to the owner's pouch for more specific information on your head unit or call your Regal dealer.

All of the components which comprise the waste system are made of materials specially formulated to prevent odor permeation and to resist chemical actions. It is strongly recommended that you regularly add chemical to your holding tank by flushing it through the head. This chemical helps to control odor and break down the waste. Follow the manufacturer's instructions on the chemical before using it.





CAUTION

Do not flush into a full holding tank. Attempting to flush the head when the tank is full could result in damage to the waste system.

Waste Disposal (Optional on Select Models)

The typical marine toilet layout, such as the one illustrated earlier directs all waste to the holding tank. To dispose of waste, marina's hook up a special hose to the "waste" deck fitting and pump the waste out of the holding tank and dispose of it properly. Also, this pump out system is available with chemical toilets.

Overboard Discharge (Optional on Select Models)

Some Regal models feature an overboard discharge seacock. It is found on the hull bottom. It allows the waste to be emptied directly into the water. Simply open the discharge seacock so the handle assumes an in-line position. Be sure to close the seacock when not in use and before leaving the boat unattended for extended periods.



WARNING

Discharging waste within the three mile coastal limit of the United States is prohibited by Federal regulations.

Macerator Pump System (Optional on Select Models)

In the typical macerator system used on Regal boats, the macerator (waste pump) grinds up waste when activated for overboard discharge use. The pump is placed so it doesn't interfere with pump out dumping. Be sure the discharge seacock is open. Close seacock after discharging.

Do not run the pump dry. Running the waste pump when there is no waste to pump out of the holding tank will shorten the life of the pump. Do not run the pump more than 15 minutes at one time. It is a good idea to carry an extra impeller for emergency repairs.

Systems, Controls & Indicators

Fuel

The basic fuel system consists of one built-in fuel tank with vent, a fuel level sensor and fuel indicator. An anti-siphon valve prevents fuel from accumulating in the bilge should a hose break. Remember that the dash fuel gauge is not as accurate as a car's gauge because of the amount of fuel sloshing in the tank that occurs while the boat is running. Make sure you provide for a reserve amount when monitoring this gauge.

When the engine is operating, the fuel pump "pulls" fuel from the tank, bringing it into the engine where it is distributed to the cylinders and burned. Consult the engine operator's manual for fuel recommendations.

Remember, that today's gasoline grades don't stay as "fresh" as earlier types. Therefore, if you are leaving your vessel for extended periods of time it is recommended that a fuel conditioner be added to the existing fuel level and the tank is filled full. Fuel conditioners can be purchased at a marina or boating supply store.

Ventilation

The ventilation system is designed to remove and prevent the accumulation of explosive vapors in the hull and engine compartment. Therefore, proper ventilation is extremely important to boat safety.

Powered systems consist of a blower which "pulls" air out from the engine compartment and bilge area; one or more vents allow fresh air in. Natural systems have both intake and exhaust vents; as the boat moves, air is forced into the intake and escapes through the exhaust vents.

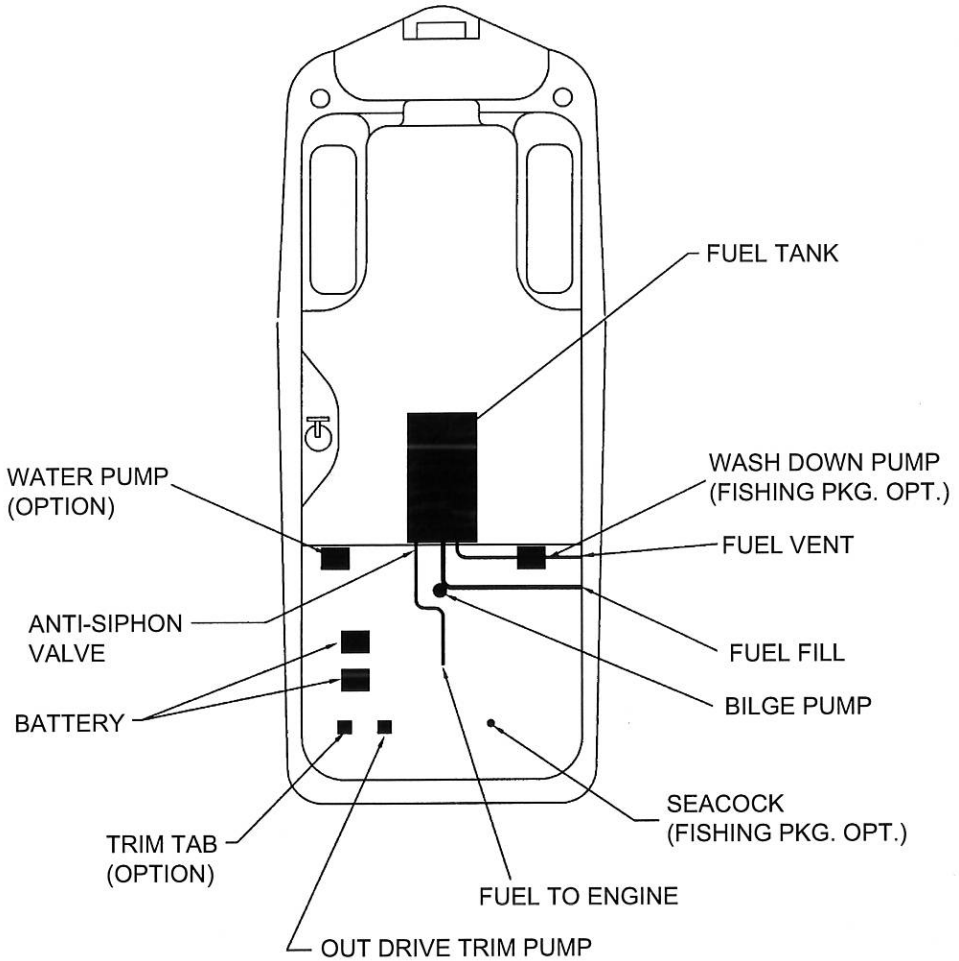


WARNING

Gasoline vapor can EXPLODE! Before starting engine, check engine room for gasoline vapors. Turn on blower for at least 4 minutes before starting engine. Run blower below cruising speeds.

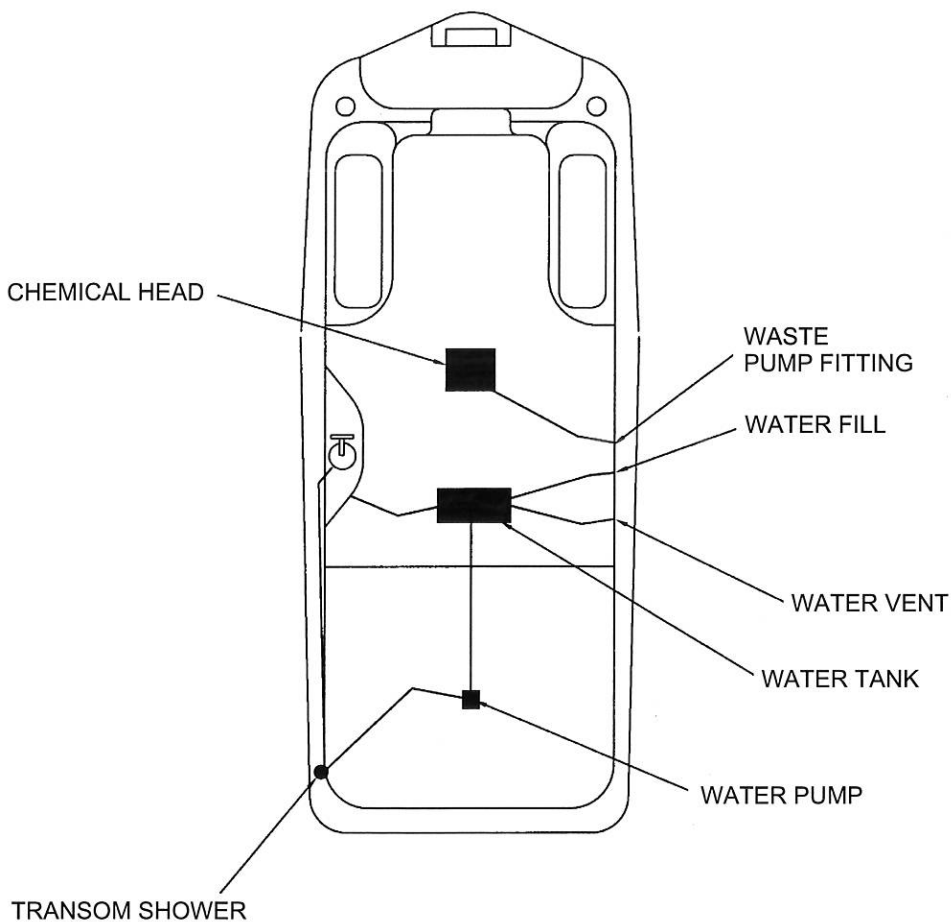


200 DESTINY MACHINERY & FUEL SYSTEM



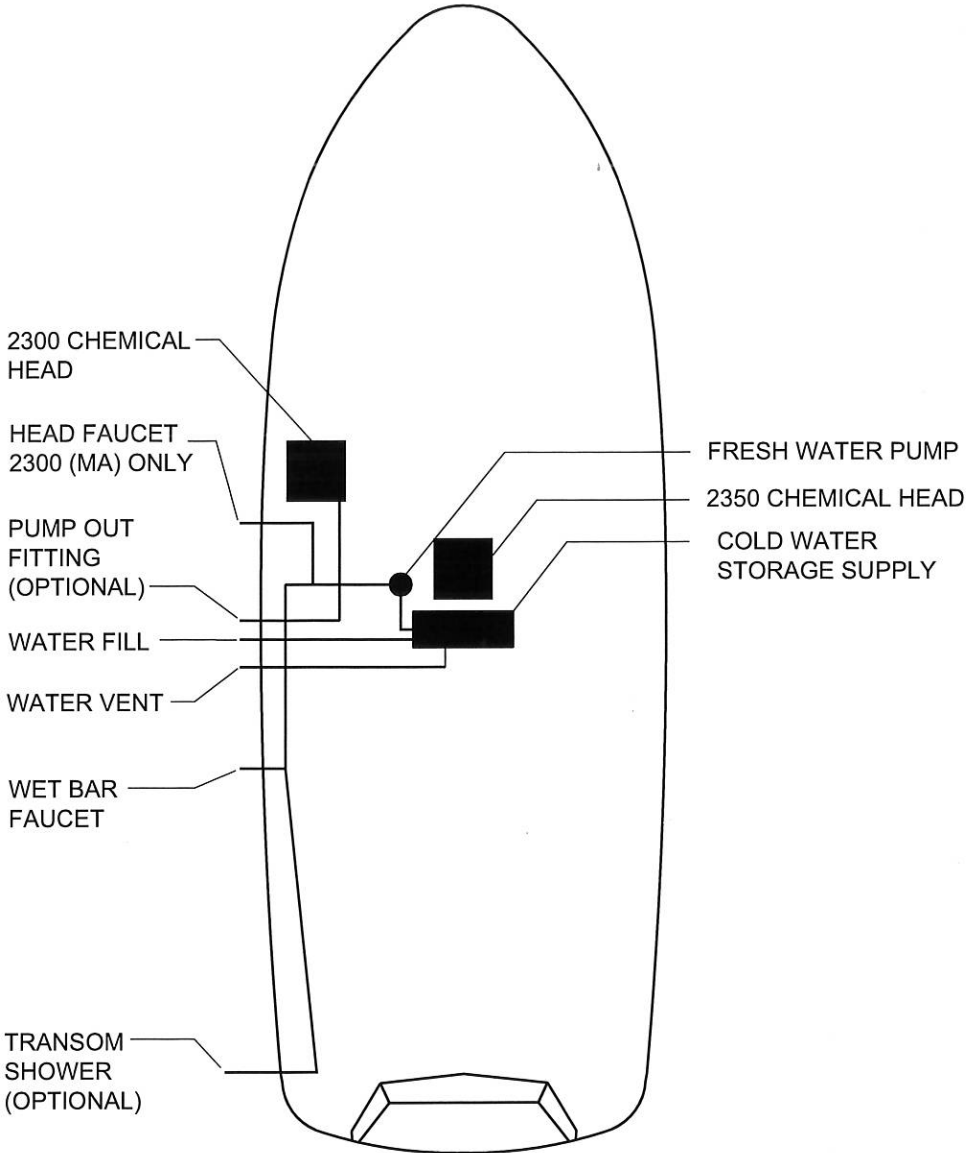
Systems, Controls & Indicators

200 DESTINY FRESH WATER & WASTE SYSTEM



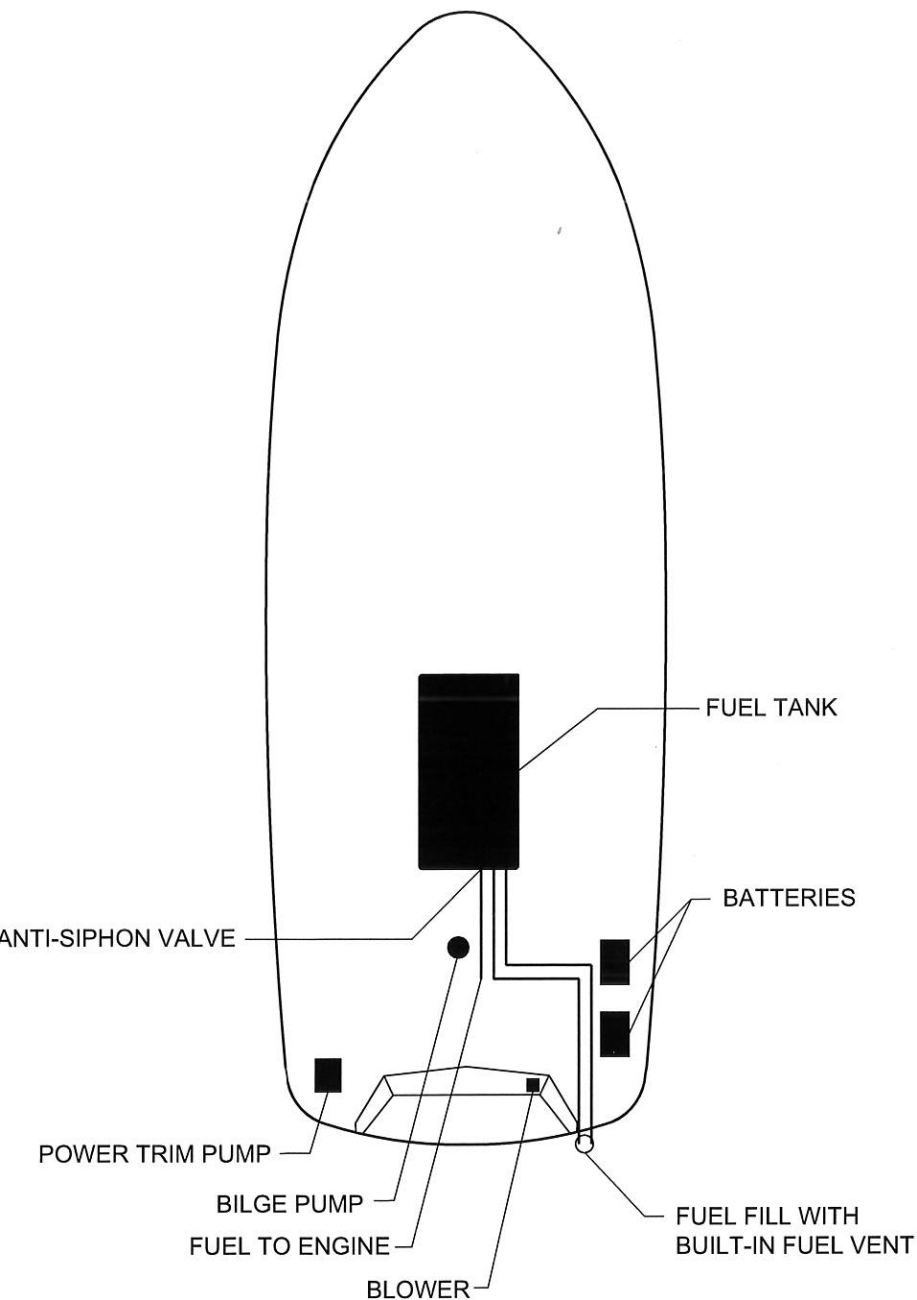


2300/2350 MACHINERY & FUEL SYSTEM



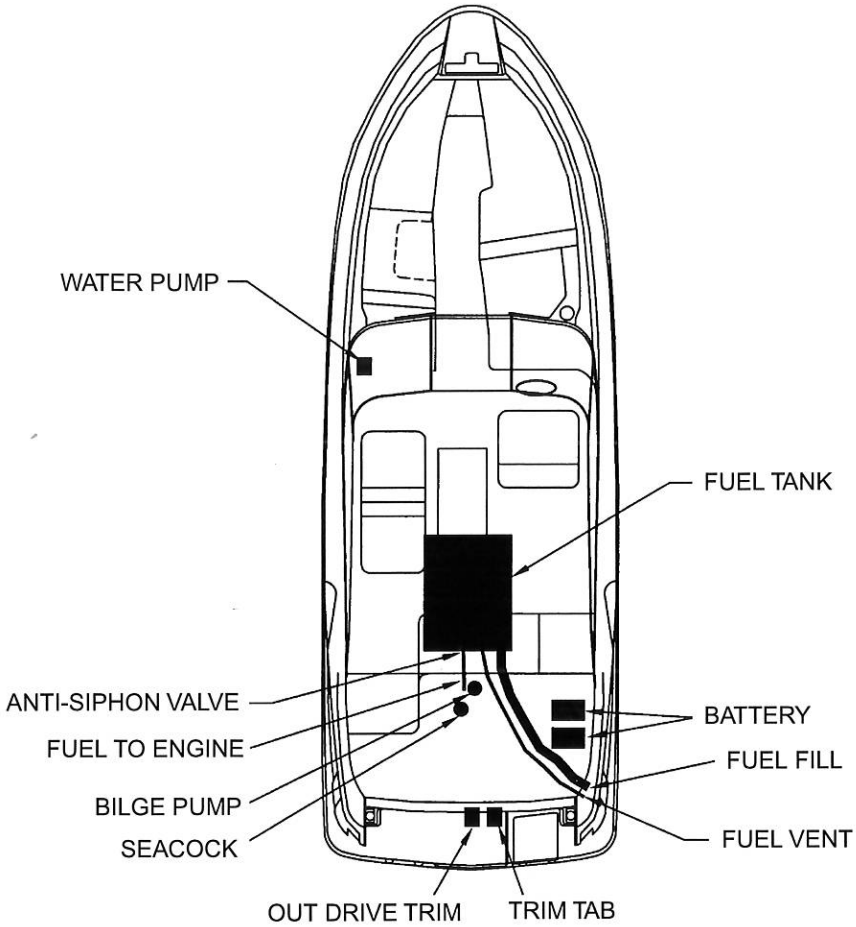
Systems, Controls & Indicators

2300/2350 FRESH WATER & WASTE SYSTEM



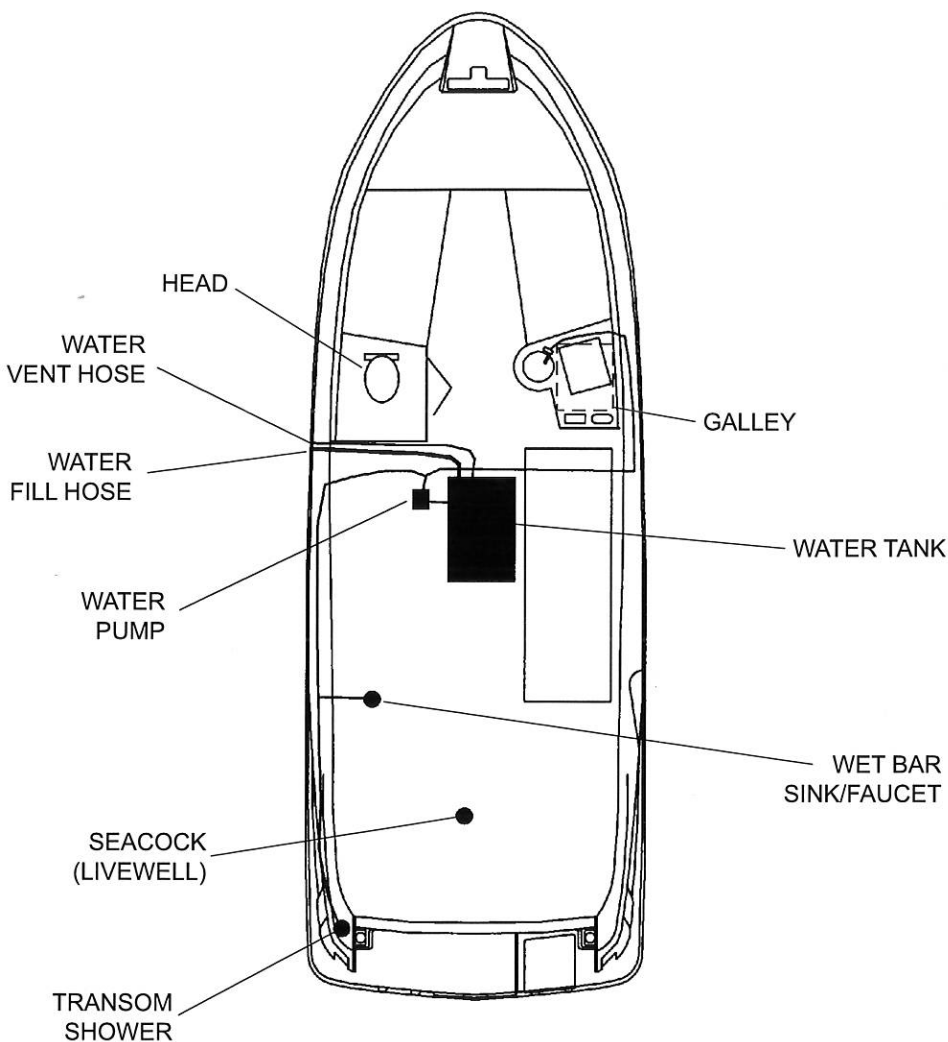


2500/2550 MACHINERY & FUEL SYSTEM



Systems, Controls & Indicators

2550 FRESH WATER & WASTE SYSTEM

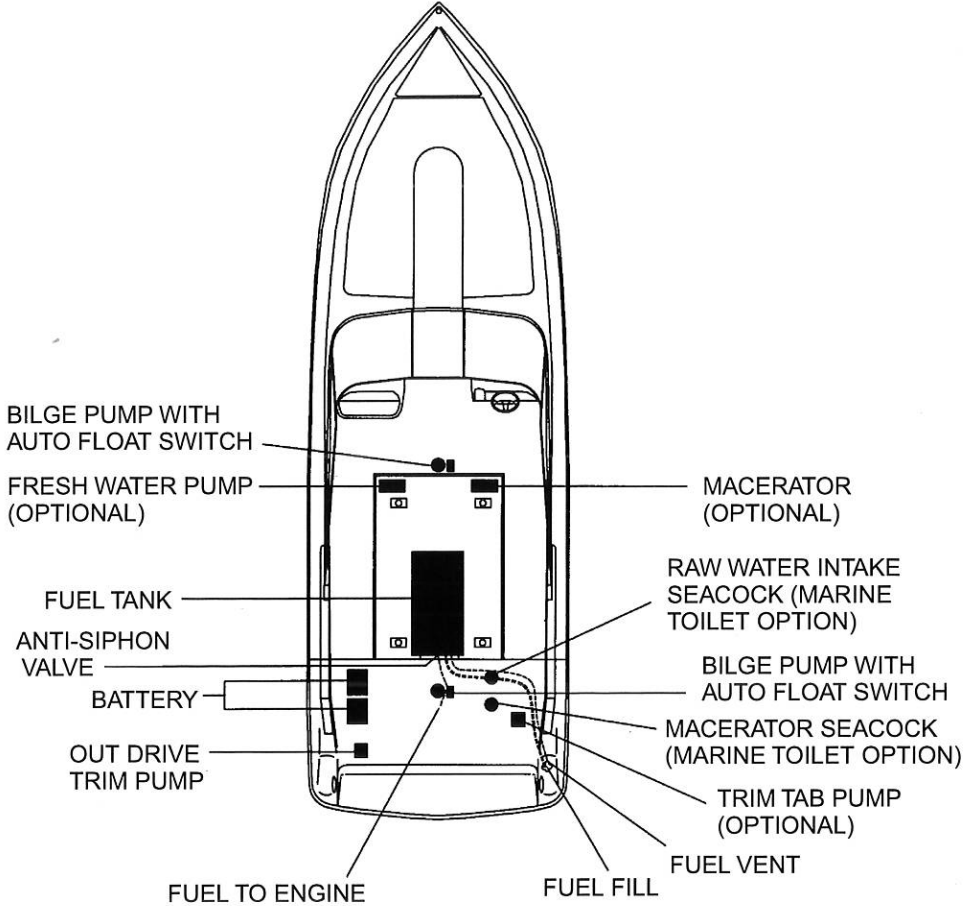


*Equipment may be optional on select models

REM-013

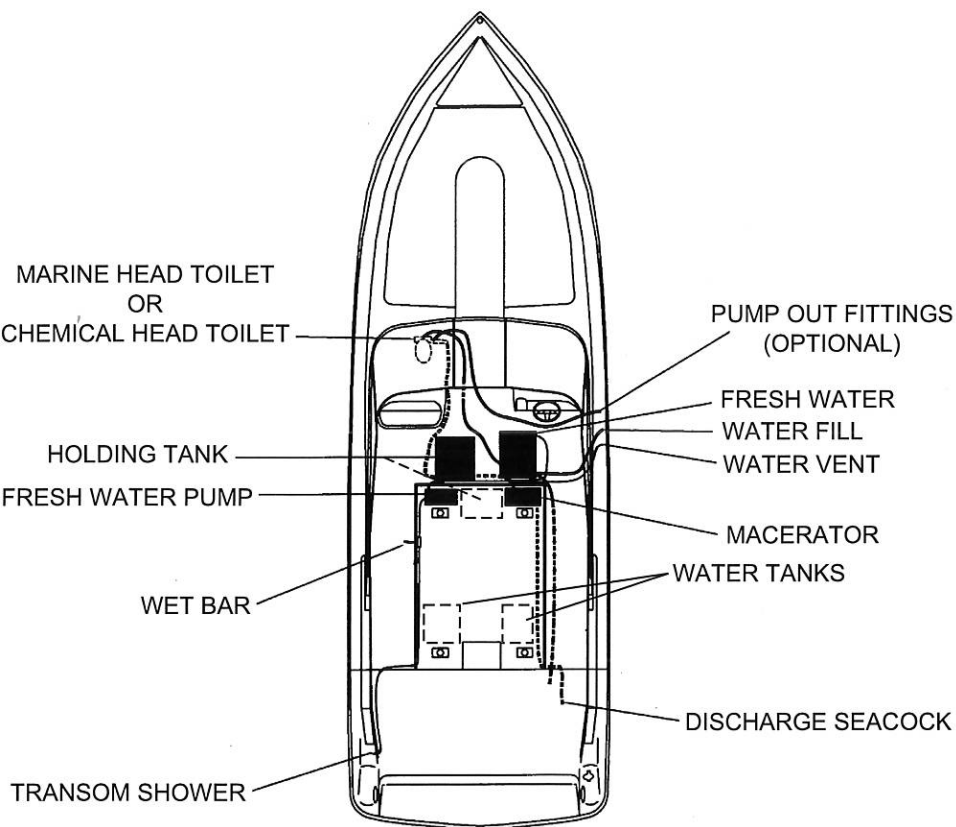


2800/2850 MACHINERY & FUEL SYSTEM



Systems, Controls & Indicators

2800/2850 FRESH WATER & WASTE SYSTEM



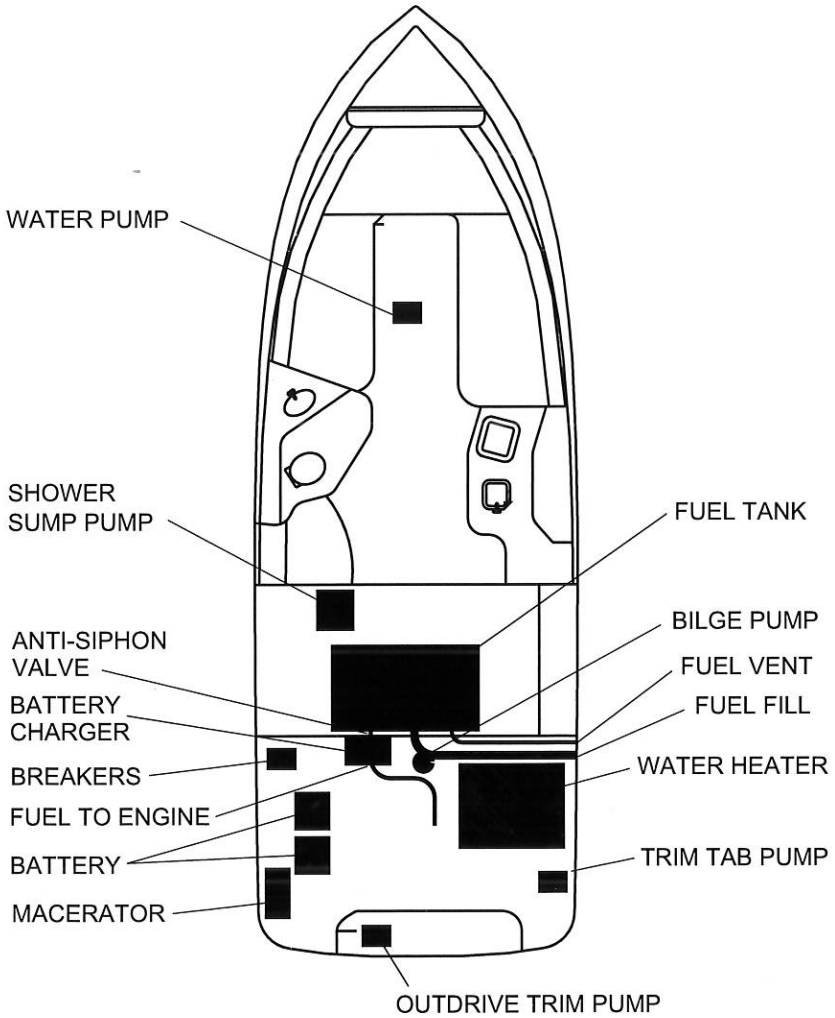
----- 2850

*Equipment may be optional on select models

REMA-032

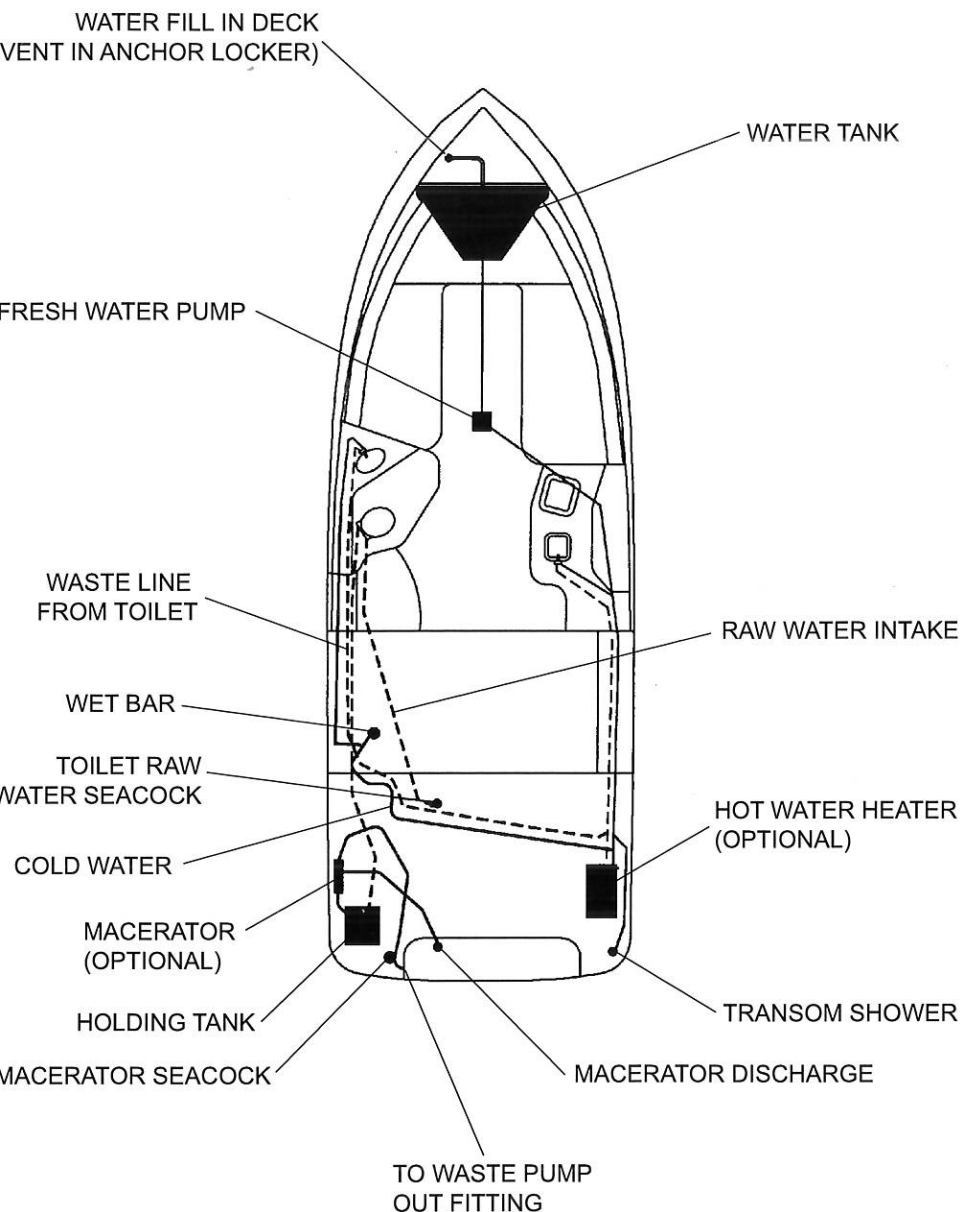


2460 MACHINERY LAYOUT & FUEL SYSTEM



Systems, Controls & Indicators

2460 FRESH WATER & WASTE SYSTEM WITH THROUGH HULL FITTINGS



Chapter 4

Controls and Indicators



Knowing the controls and indicators on your boat is essential for safe and proper operation. The controls and indicators shown in this section may be optional or slightly different than those on your boat.

SHIFT/THROTTLE CONTROLS



WARNING

Improperly maintained controls are hazardous and may cause sudden loss of control. Make sure all shift/throttle hardware and cables are regularly inspected and maintained. Improper maintenance may result in a loss of control, resulting in serious injury or death.

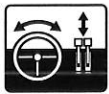
The shift/throttle control on your boat differs from model to model and may depend on the engine used. The following shift/throttle controls are typical of the operation of most controls used. Be sure to consult the engine or control manual for specific operational differences.

CAUTION

Never shift too quickly from forward to reverse. Stay in neutral, or idle position until the boat has lost most of its headway before completing the shift to reverse or engine damage may occur.

NOTICE

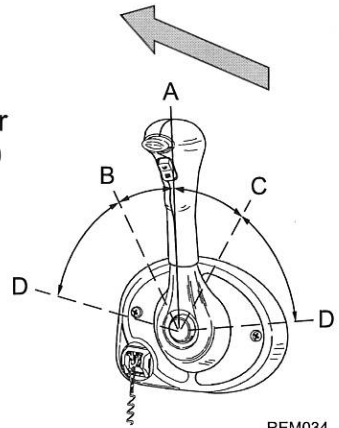
All shift/throttle controls are equipped with a safety switch for “start in neutral only” operation. Be sure the control is in neutral before attempting to start the engine.



Single Lever Controls

Single lever controls operate as both a gear shifter and a throttle for a select engine. The lever is detented in the neutral position for starting. Shifting is accomplished by moving the lever into the first 15° of travel; push the lever for forward, and pull the lever back for reverse. By advancing the lever beyond 15°, you move from the shifting range to the throttle range. Never attempt to shift without the engine running. For engine warm-up, a separate lever or button on the control is used for throttle advance while the transmission remains in neutral.

- A. Neutral Position - Safety switch will allow starting in this position only.
- B. Forward Position - Press release button under handle to allow shifting to forward (or reverse) position.
- C. Reverse Position - Do not shift quickly from forward to reverse.
- D. Throttle Position - Pushing in forward or pulling in reverse increases engine speed.

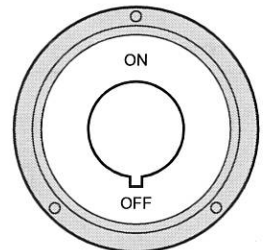


REM034

SWITCHES

Each electrical circuit on your boat is equipped with a control switch. Some switches may have an LED indicator for easy ON/OFF identification. Most switches will have a fuse holder, or circuit breaker adjacent to the switch.

Battery Switch (Optional on Select Models) – Connects the battery to the electrical system. Provides isolation and positive disconnect of battery to protect against tampering, electrical fire hazards, and battery rundown. Rotate switch to the OFF position when the boat is not in use.



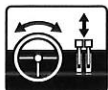
TYPICAL
BATTERY
SWITCH

KC-0704



WARNING

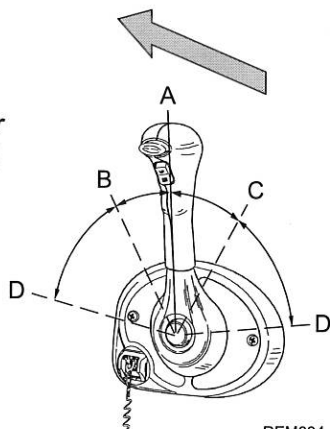
Never turn switch to the OFF position while the engine(s) is running or serious alternator/electrical system damage could occur.



Single Lever Controls

Single lever controls operate as both a gear shifter and a throttle for a select engine. The lever is detented in the neutral position for starting. Shifting is accomplished by moving the lever into the first 15° of travel; push the lever for forward, and pull the lever back for reverse. By advancing the lever beyond 15°, you move from the shifting range to the throttle range. Never attempt to shift without the engine running. For engine warm-up, a separate lever or button on the control is used for throttle advance while the transmission remains in neutral.

- A. Neutral Position - Safety switch will allow starting in this position only.
- B. Forward Position - Press release button under handle to allow shifting to forward (or reverse) position.
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- D. Throttle Position - Pushing in forward or pulling in reverse increases engine speed.

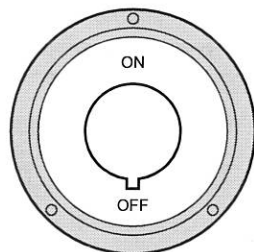


REM034

SWITCHES

Each electrical circuit on your boat is equipped with a control switch. Some switches may have an LED indicator for easy ON/OFF identification. Most switches will have a fuse holder, or circuit breaker adjacent to the switch.

Battery Switch (Optional on Select Models) – Connects the battery to the electrical system. Provides isolation and positive disconnect of battery to protect against tampering, electrical fire hazards, and battery rundown. Rotate switch to the OFF position when the boat is not in use.



TYPICAL
BATTERY
SWITCH

KC-0704

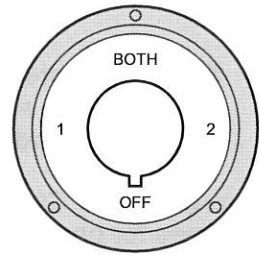


WARNING

Never turn switch to the OFF position while the engine(s) is running or serious alternator/electrical system damage could occur.

Controls and Indicators

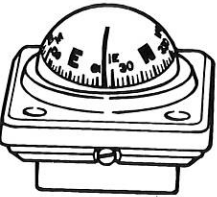
Battery Selector Switch (Optional on Select Models) – Operates as a battery switch and provides the additional ability to connect two batteries in parallel for starting in case one battery is low. Allows emergency starting of either engine with the opposite battery. May be used in conjunction with an isolator and third battery. Refer to Ship Systems for more information.



TYPICAL
BATTERY
SELECTOR
SWITCH

KC-0705

Windshield Wiper Switch – Controls operation of windshield wipers.



KC-0920

Compass – Aids with navigation by indicating where NORTH is located. The compass must be adjusted for the area you are in and can be affected by instruments installed adjacent to it. The compass must be compensated (corrected) for deflections caused by magnets and electrical wiring in its vicinity.

After all optional equipment has been installed in the helm area, the compass should then be compensated. Since the compass is an important navigational aid, the compensating should be done by a qualified compass adjuster. It is seldom that a compass can be corrected to zero deviation on all headings, so he will provide you with a deviation card or chart showing the correction to be applied when laying out a compass course or making your navigational calculations.

After the compass is adjusted, do not permit items which might affect it to be placed near the compass, even temporarily. The compass must be readjusted if any influencing item for which it has been compensated is removed or relocated, or added in the vicinity. As a rule of thumb, electrical or metal items should be kept three or more feet away from the compass so as not to affect its magnetic field.

Get to know your compass. Watch how it swings. Check that its readings are consistent on frequently sailed courses. Note if it becomes sluggish, and above all, if it becomes erratic. These two signs warn of alien magnetism or damaged compass.

Navigation Lights Switch – Controls the running and anchor lights for night operation. NAV position will turn on the red and green navigation bow lights, white stern light, and gauge illumination. ANC position turns on only the white stern light for night anchoring.



NOTICE

Never operate the boat between sunset and sunrise with the switch in the anchor light position. Running lights are legally required to indicate direction and right-of-way at night.

Boarding and Courtesy Lights Switches – Are controlled by selector switches for operation of boarding lights and cockpit courtesy lights. The main DC breaker (Master Power) switch must first be in the ON position to activate lighting.

Blower Switch – Activates the engine compartment ventilation blower to remove explosive fumes from the engine and bilge areas.



WARNING

The blower must be operated for a minimum of 5 minutes before each time the engine is started. In addition, the blower should be operated continuously when at idle or slow speed running. Failure to operate the blower can lead to conditions favorable for an explosion, with severe personal injury or death resulting.

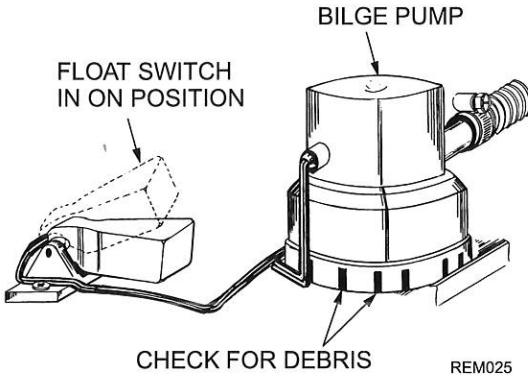
Bilge Switch – Activates the bilge pump to remove excess water from the bottom of the boat. Some models are equipped with an automatic bilge pump setting. Switch to AUTO whenever the boat is in operation, water will be pumped-out as it enters the bilge and the pump will automatically shutdown when the bilge is dry.

CAUTION

Be sure to switch the bilge OFF (not AUTO) when the boat is not in use. Running the pump when the bilge is dry will damage the pump.

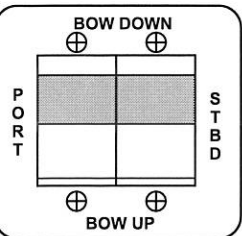
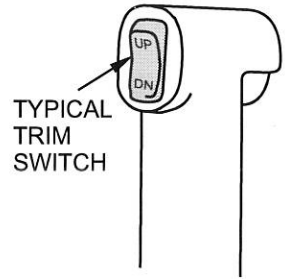
Bilge Pump and Float Switch – The automatic bilge pump is located in the sump usually in front of the engine. This switch is connected to a dash icon which will light when the switch activates the bilge pump. Periodically lift the automatic switch to ensure it is operating. You will hear the bilge pump start to run when the automatic switch is in the up position. Check the bilge pump grate for debris.

Controls and Indicators



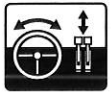
Ignition Switch – Starts and stops the engine. A built-in protection system prevents the engine from starting in any other gear than neutral. Be sure to consult the engine operator's manual for more information.

Horn Button – Push and hold to sound the horn.



Trim Switch – Your engine is equipped with power trim and tilt. This switch activates that function. Push and hold the switch until the engine is at the desired angle. Use this switch in combination with the trim gauge.

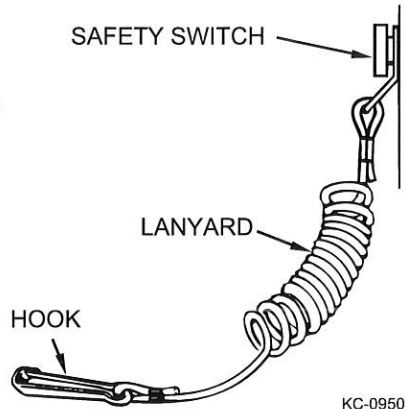
Trim Tab Switches – These rocker switches control the trim tabs located on the port and starboard transom. Adjusting trim tabs will improve the ride of your boat and correct listing from side to side due to varying conditions. See the OPERATION Section in this manual for further trimming procedures. (Trim Tabs – Optional on Select Models.)



Chapter 4

Engine Stop Switch and Lanyard – The engine stop switch stops the engine when engaged. Attach the lanyard to the boat operator whenever the engine is running. If the operator is thrown from the seat or moves too far from the helm, the lanyard will engage the switch and shut off the engine.

To attach the lanyard, connect one end to the safety switch and the hook on the opposite end of the lanyard to a strong piece of clothing on the operator, such as a belt loop.



KC-0950



WARNING

Attach the Engine Stop Switch lanyard to the operator before starting the engine. This will prevent the boat from becoming a runaway if the operator is accidentally thrown away from the helm.

The Engine Stop Switch can only be effective when it is in good working condition. Observe the following:

- **Never remove or modify the Engine Stop Switch and/or lanyard.**
- **Lanyard must always be free from obstructions that could interfere with its operation.**

Once a month: Check switch for proper operation. With engine running, pull lanyard. If engine does not stop, see your DEALER for replacement of switch.

NOTICE

The engine will not start unless the engine stop switch lanyard is attached.

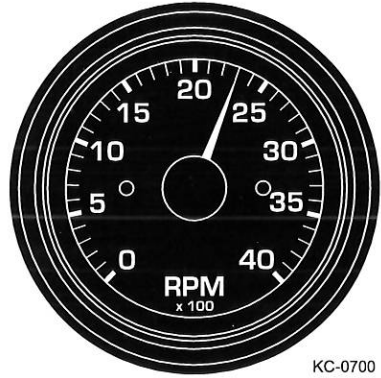
Controls and Indicators

INDICATORS

Instruments are illuminated for night operation. Their type, number, and location vary by model; some may not appear on your model.

Tachometer

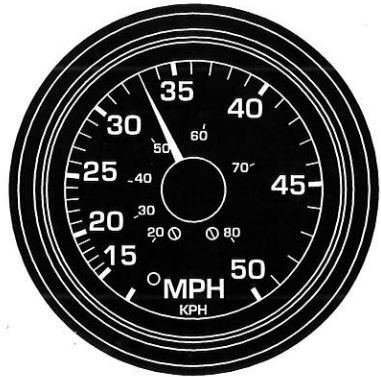
Registers engine speed in revolutions per minute (RPM). Use this gauge to keep the engine within the proper operating range. Consult the engine manual for the proper RPM operating range for your engine.



KC-0700

Speedometer

Registers forward boat speed in miles per hour. Use this gauge to monitor fuel consumption and propeller performance. Since most marine speedometers operate with water pressure, accuracy is only approximate.



KC-0710

Fuel Level Gauge

This gauge registers approximate fuel level in the gas tanks. The Ignition switch must be in the RUN position to activate the gauge. Since the accuracy of your gauge varies with the attitude of your boat (trim and list), and the fuel pick-up tube cannot withdraw all of the fuel in the tank, it is wise to observe the One Third Rule. Use one third of your gas to go out, one third to come back, and one third as a reserve.



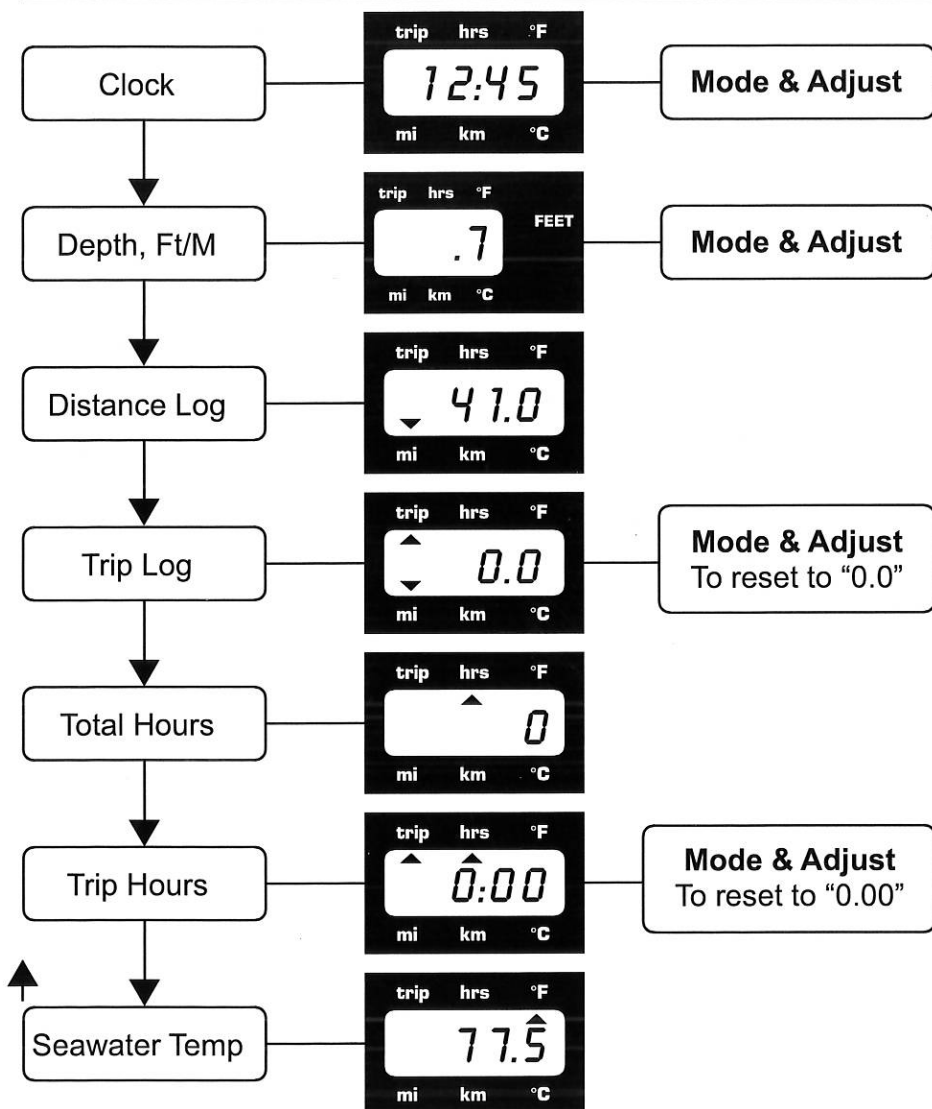
KC-0720



VDO Marine Quick Start for Display Settings Instrument Module

Use the **MODE** button to toggle through the 7 basic settings.
Press both **MODE** and **ADJUST** to enter or change values.

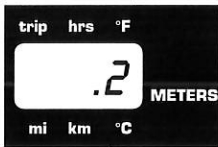
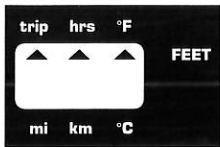
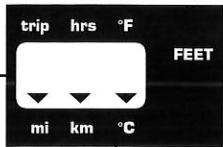
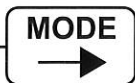
Arrow(s) show current Function.



Controls and Indicators

ADJUST to set Hours
MODE to go to Minutes
ADJUST to set Minutes

MODE to 12.24
ADJUST to select
MODE to exit



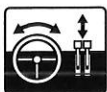
ADJUST decreases
Depth Alarm Value
MODE to next →

ADJUST to select
Feet or Meters
MODE to next →

ADJUST increases
Depth Alarm Value
MODE to next →

ADJUST to
select Depth
ON or **OFF** →

Note: Set Depth to **METERS** will change
Distance functions (log) to km (kilometers)
and Temperature to °C (centigrade)



Chapter 4

VDO Trim Gauge

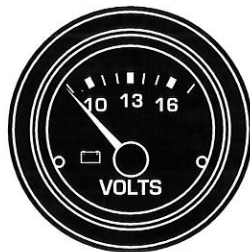
Measures engine or stern drive tilt and indicates the relative position of the bow, up or down when boat is on plane. Use this gauge to monitor boat trim.



KC-0740

Voltmeter

Indicates the condition of the main or cranking battery in volts DC. Normal operating range is 12+ volts.



KC-0750

VDO Instrument Pod/Module

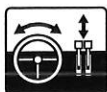
This multi-display instrument is used on 2300 and 2350 sportboats. The analog gauges in this pod record and display engine functions as described earlier in this chapter. In addition, with this system Volvo and Mercruiser engine alarm buzzers are automatically routed to the instrument pod alarm system.

As a back-up, an icon indicates low oil pressure, high engine temperature, low battery voltage, and low fuel supply. The pod lights at night when the navigation light switch is activated.

There is a multi-function module which displays time, depth, distance and trip logs, total hours, trip hours, and sea water temperature. Where applicable, the module reads both in U.S. and metric measurements. The speedometer utilizes a transom mounted paddle wheel which sends a signal to the pod. Check the paddle wheel periodically for debris.

There is a mode and adjust button on the switch panel to toggle through the seven basic settings. If the battery should go dead, the module will hold its settings due to the built-in memory feature.

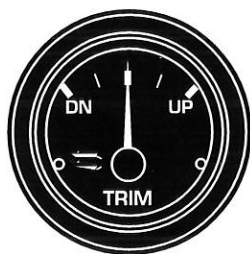
Use the flow diagram on the following pages to adjust the module.



Chapter 4

VDO Trim Gauge

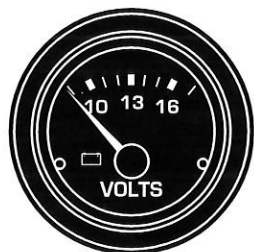
Measures engine or stern drive tilt and indicates the relative position of the bow, up or down when boat is on plane. Use this gauge to monitor boat trim.



KC-0740

Voltmeter

Indicates the condition of the main or cranking battery in volts DC. Normal operating range is 12+ volts.



KC-0750

VDO Instrument Pod/Module

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There is a mode and adjust button on the switch panel to toggle through the seven basic settings. If the battery should go dead, the module will hold its settings due to the built-in memory feature.

Use the flow diagram on the following pages to adjust the module.

Controls and Indicators

CAUTION

Continued operation after the warning alarm has sounded may cause severe engine damage.

Engine Water Temperature Gauge

Indicates the water/coolant temperature inside the engine. Consult the engine manual for the normal operating range.



KC-0770

Engine Oil Pressure Gauge

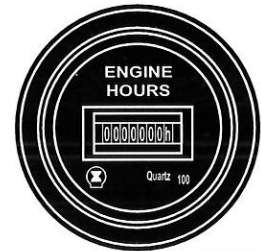
Indicates the pressure of the lubricating oil inside the engine. Consult the engine manual for the normal operating range.



KC-0780

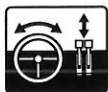
Engine Hourmeter

Registers accumulated engine operating time, and is activated when the ignition switch is in the "ON" position. Be aware that time will be logged whenever the ignition switch is "ON," even when the engine is not running. Use the hourmeter to keep accurate logs for scheduled maintenance.



KC-0782

Depth Sounder – Indicates the distance between the bottom of your boat and the earth's surface directly below the transducer. To avoid running aground in shallow water, always add extra distance to meter reading. Consult the depth sounder operator's manual for more information.



Chapter 4

Gas Vapor Detector (Optional) – Alarm will sound when gas fumes are detected. Turn on bilge blower to evacuate fumes. The sensor for the vapor detector is mounted in the bilge area where fumes collect. Test the unit before each cruise to check for proper performance.



WARNING

If the gas vapor detector indicates a dangerous condition, do the following:

- **DO-NOT** operate electrical equipment.
- **Extinguish** open flames and smoking materials immediately.
- **Turn engine(s) OFF.**
- **Wait 5 minutes** before opening the engine compartment to investigate the cause.
- **Determine cause and correct immediately** before resuming operation.



Chapter 5

Operation

This section describes the basics of fueling, starting, running, stopping, steering, trimming and docking your boat. Since there is a variety of control and engine options, be sure to consult the other owner's manuals provided with your boat.

FUELING

Built-in tanks have the fuel filler located on the engine.

The fuel tank is equipped with an anti-siphon valve. The anti-siphon valve operates automatically. Because gasoline fumes are heavier than air, they will sink to the lowest part of your boat, such as the bilge. It is important to always evacuate fumes with the blower before attempting to start engine.



DANGER



Gasoline is extremely flammable and highly explosive under certain conditions. Always stop the engine and never smoke or allow open flames or sparks within 15 m (50 ft.) of the fueling area.

CAUTION

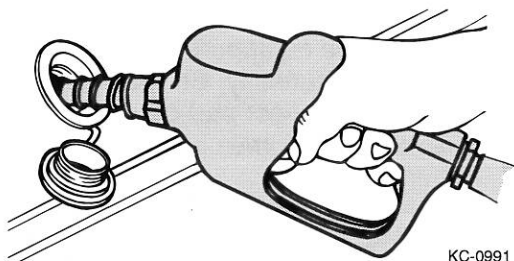
To prevent unwarranted engine damage, consult your engine operator's manual for manufacturer recommended fuel and oil specifications.



Chapter 5

Take care not to spill gasoline. If gasoline is accidentally spilled, wipe up all traces of it with dry rags and immediately dispose of the rags properly onshore. When fueling:

1. Know your fuel tank capacity. Be sure to have enough fuel to reach your destination. If departing for an extended cruise, know the availability of fuel along your route.
2. Avoid fueling at night, except under well lighted conditions.
3. Moor your boat securely to the dock. Know the location of fire extinguisher in case of emergency.
4. Keep accurate records on fuel consumption. A fuel log tracking fuel use over time will help determine average consumption.
5. Close all doors, hatches, windows, and other compartments.
6. Extinguish cigarettes, pipes, stoves, and all other flame producing items.
7. Make sure all power is off, and do not operate any electrical switches.
8. Remove fuel fill cap. Insert hose nozzle and make sure nozzle is in contact with or grounded against fill opening. This will reduce the risk of static spark.
9. Add fuel in accordance with the engine operator's manual. Do not fill to capacity to allow for fuel expansion.
10. Check oil level.



KC-0991

NOTICE

Each time you fill up, inspect fuel lines for leaks and hose deterioration.

NOTICE

The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into the water. Violators can be fined \$5,000. We urge you to protect our fragile environment by avoiding any type of discharge, trash, or litter into our waterways.

Operation

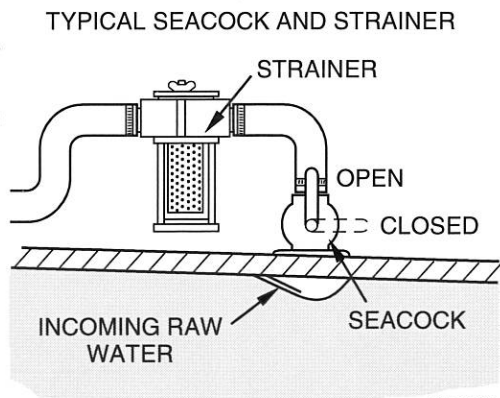
After fueling, you should:

1. Tighten fill cap securely and wipe up spillage.
2. Open all windows, hatches, doors, and compartments.
3. Check all fuel lines and connections for leakage.
4. Run blower for at least five minutes before starting your boat. If you smell gasoline fumes, continue to run blower.

STARTING

The following starting guidelines cover a wide variety of engine power and accessory options. Be sure to follow the starting instructions contained in the engine operator's manual and tailor starting procedures for your particular model.

1. Complete Pre-Operation checks found in the GETTING UNDERWAY section.
2. Turn battery selection switch to #1 or #2 position (if installed).
3. Open engine hatch.
4. Operate bilge blower for at least five minutes prior to starting engine(s). Continue to operate until underway at cruising speed.
5. Use manual bilge pump switch to remove any water in bilge below the automatic switch level.
6. Make sniff test with your nose; this is a very effective way to detect fumes.
7. Open seacocks for engine cooling water. Seacocks for washdowns, heads, air conditioning, etc. are opened on an as needed basis.
8. Close engine hatch.
9. Move stern drive(s) to full IN position.
10. Move trim tab controls to the full UP position.
11. Put shift lever(s) in NEUTRAL position.





Chapter 5

12. Move throttle lever(s) fully forward and return to idle position. Throttle linkage and cable must move freely.
13. Slightly advance throttle lever forward.
14. Turn the ignition key switch of one engine to START position. Release key immediately after engine starts.
15. If engine will not start, move throttle to FULL position once or twice to actuate the carburetor accelerator pump.
16. Operate engine at approximately 1000 to 1200 RPM for a few minutes before starting other engine (if equipped).
17. Repeat steps for remaining engine, if equipped.
18. Make sure gauges indicate normal operating ranges. If not, shut down engine(s) immediately and determine cause.
19. After running engine(s) at 1000 to 1200 RPM for several minutes, reduce throttle to idle speed until you're ready to depart.



WARNING

The blower must be operated for a minimum of 5 minutes before each time the engine is started. In addition, the blower should be operated continuously when at idle or slow speed running. Failure to operate the blower can cause an explosion.

CAUTION

To prevent damage to the engine:

- **Do not operate starter longer than a few seconds; let it cool for several minutes before trying again.**
- **Shift quickly and without hesitation. Never ease engine into gear or shift mechanism could be damaged.**

SHIFTING/RUNNING

Follow these guidelines when shifting your boat:

- Pause in neutral before shifting from forward to reverse, or reverse to forward.
- Avoid shifting into reverse while the boat is traveling forward at speed.
- Keep the shifter control clean and clear of obstructions.

STEERING



WARNING

The steering system must be in good operating condition for safe boat operation. Frequent inspection, lubrication, and adjustment by your dealer is recommended.

All boats have a tendency to wander somewhat at slow speeds. A natural reaction to this effect is to steer the boat back and forth in an attempt to compensate for wandering. Invariably, the compensation will result in oversteer and only worsen the effect. Keep the steering wheel in the center position, the boat will wander back and forth somewhat, but the overall course will be a straight one.

STOPPING

1. Slowly bring throttle control to the idle position and the shift control to the NEUTRAL position. Bring the trim tabs to the UP position and the outriggers to the IN position accordingly. If the boat has been driven for a long period of time at high speed, allow the engine a 2-3 minute cool-down period at low idle.
2. Turn the ignition key to the OFF position.
3. If any problems were encountered during the outing, have the boat inspected by your dealer and request any necessary repairs before the next outing.



WARNING

Do not use the engine stop switch for normal shut down. Doing so may impair your ability to re-start the engine quickly or may create a hazardous swamping condition.



DOCKING

Practice docking before attempting it for the first time. Use a float, like a plastic milk jug with a line and small weight, as your docking target.

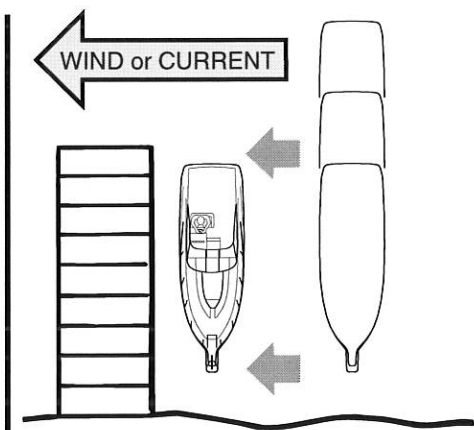
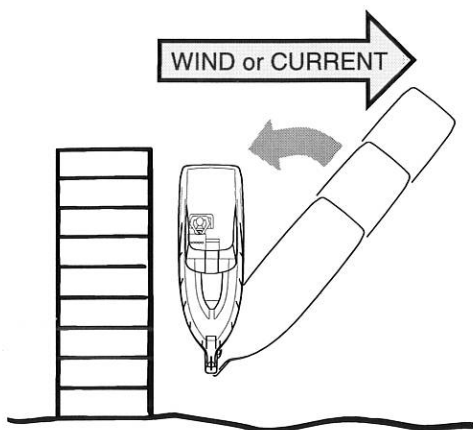


WARNING

Never use your hand, arm or other part of your body to attempt to keep the boat from hitting the dock. The boat could push against the dock, causing severe injury.

Follow these guidelines when docking:

- Approach docks with the port side of the boat if possible.
- Come to a stop a short distance from the dock, then proceed slowly.
- Have fenders, mooring lines and crew ready.
- Observe how the wind and current are moving your boat. Approach the dock with the boat pointed into the wind, if possible. If the wind or current is pushing you away from the dock, use a sharper angle of approach. If you must approach the dock downwind or down current, use a slow speed and shallow angle. Be ready to reverse to stop and maintain position.
- If there is no wind or current, approach the dock at a 10 to 20 degree angle.
- If possible, throw a line to a person on the dock and have that person secure a bow line.
- With the bow secure, swing the stern in with the engine, or pull it in with a boat hook.



Operation

Before tying-up the boat, be sure to use enough fenders to protect the boat from damage. If possible, tie-up with the bow towards the waves with a good quality double-braided nylon line. Tie-up only to the lifting or tie-down eyes; never use the handrails or windshield frames. If the boat is to be moored for a long period of time, use chafing protectors on lines to protect the gelcoat finish. Leave a little slack in the lines to allow for some wave movement or tidal action if applicable.

Follow these guidelines when departing:

- Very slowly shift into forward at idle speed.
- When the stern moves away from the dock, turn the engine away from the dock.
- Cast off bow line and back away.

If the wind or current is pushing away from the dock, cast off all lines and allow to drift until you are clear.

BOAT TRIM

The performance of your boat depends on load weight and distribution. Distribute weight evenly, from bow to stern, and also from port to starboard. After loading, the boat's trim can be adjusted by changing the engine trim angle and trim tabs.

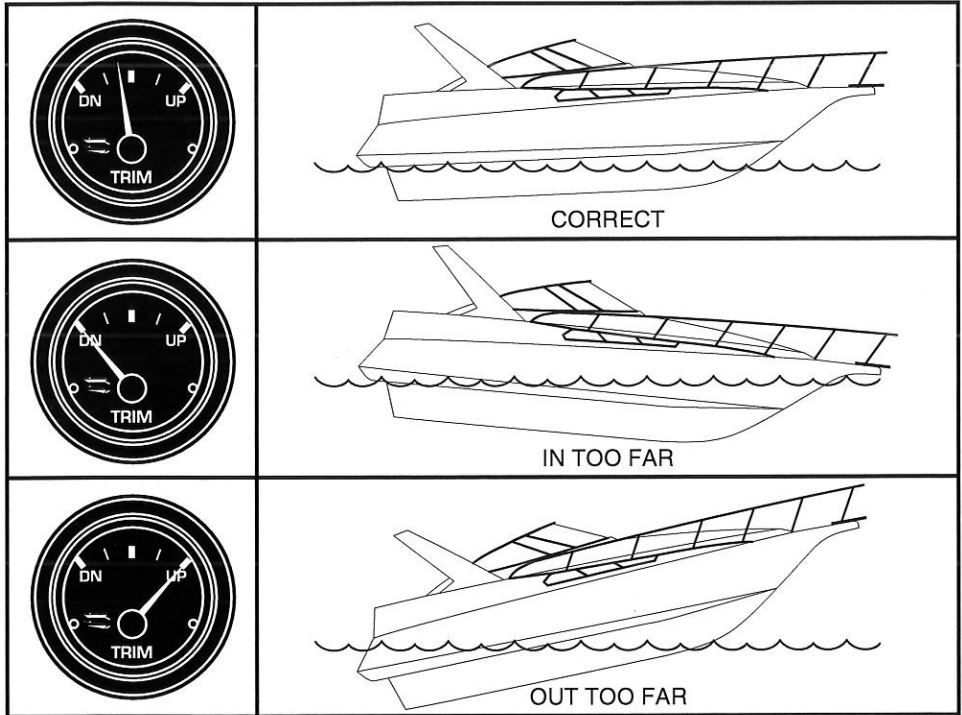
DRIVE TRIM ANGLE

Trim angle is the angular relationship between the lower drive unit and the transom of the boat. Boat trim while underway greatly affects boat performance and efficiency. For best results, the boat should be on plane and trimmed to reduce the wetted surface. With less boat in the water, both speed and fuel economy increases. Engines with manual trim must be adjusted for best overall operation for the load and conditions. Engines with power trim should be adjusted continuously for best results.



Chapter 5

If the engine is trimmed in too far (closer to the boat bottom), speed drops, fuel economy decreases, and the boat may not handle correctly. However, it does provide better acceleration from a stand still; and because it forces the bow down, visibility is improved. If the engine is trimmed out too far (away from the boat bottom), steering torque may increase, the boat may be difficult to get on a plane, and may bounce.



KC-1157



WARNING

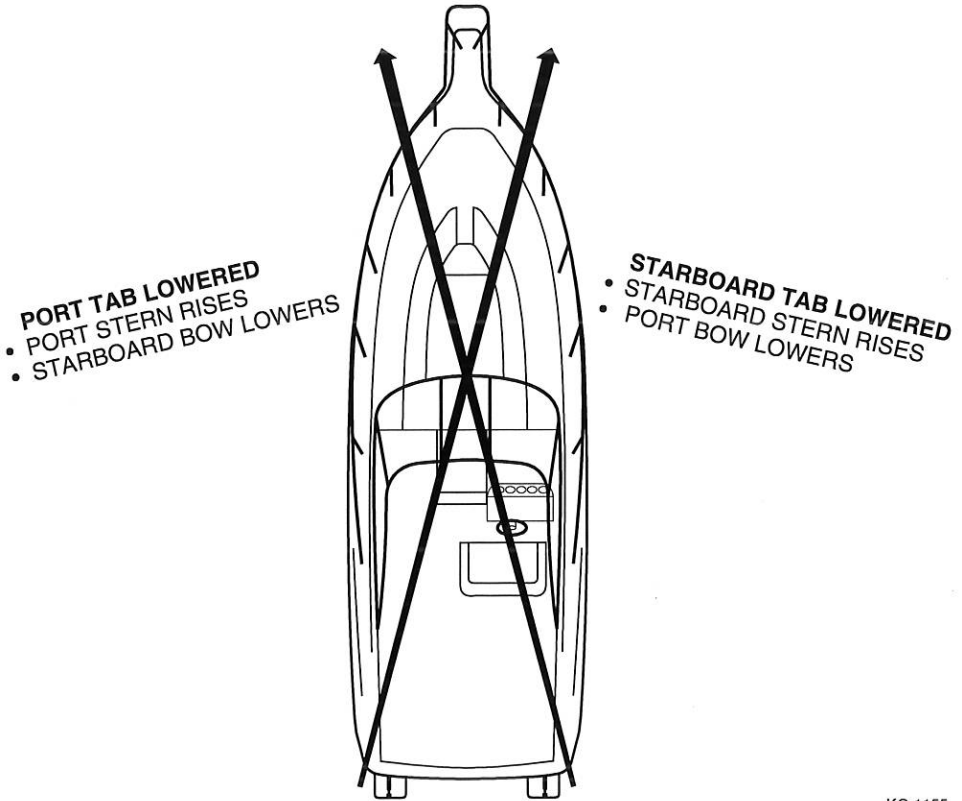
Do not trim the engine out too far or the boat may begin to “porpoise” (bounce up and down). Porpoising reduces control and visibility.

To use power trim effectively, always start with the engine trimmed in. As the boat planes, increase the angle out. Experience is the best teacher for understanding proper trim.

Operation

Trim Tabs (Optional on Select Models)

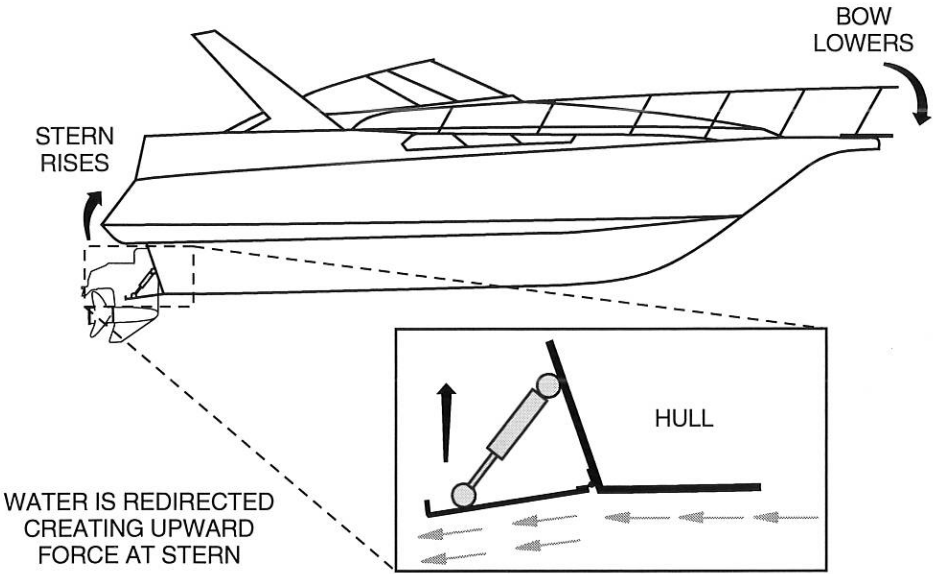
Water is deflected and redirected as the trim tabs are raised and lowered. This change in water flow creates upward pressure under the tabs, and raises the stern. When the stern raises, the bow is lowered. Likewise, lowering the port tab will cause the port stern to raise, making the starboard bow lower.





Chapter 5

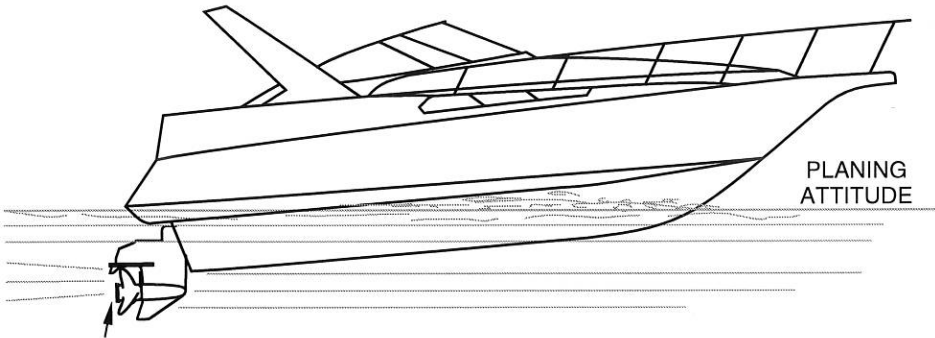
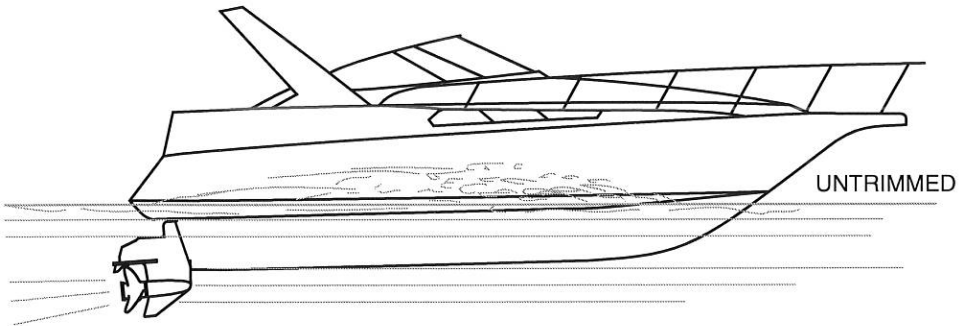
Using trim tabs in conjunction with the power trim will compensate for uneven weight distribution, listing, water conditions, and other factors that cause inefficient operation. Remember that trim tabs are trimming the hull while power trim is trimming the engine drive.



Operation

To use the trim tabs with the power trim:

1. Adjust the trim tabs to achieve a planing attitude.
2. Use the power trim to position the prop path parallel to the water flow.



PROP PARALLEL TO WATER FLOW

KC-1153

3. Readjust the trim tabs to fine tune attitude.
4. Do not overtrim because bow will dig in, causing the boat to veer.
5. To avoid listing, do not move one tab significantly further down than the other while underway.



WARNING

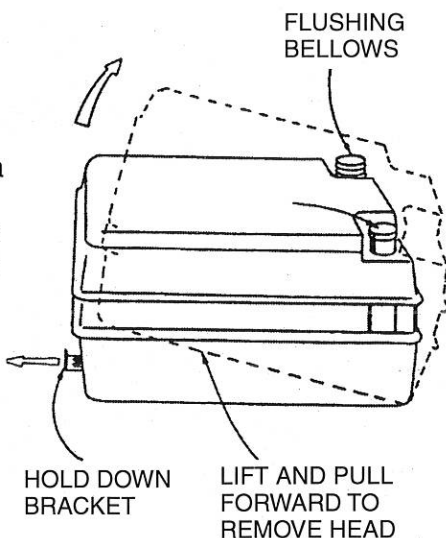
Improper use of trim tabs at high speeds can cause an accident or injury.



CHEMICAL TOILET

Select models feature a self contained marine sanitation system. It features an upper freshwater holding tank and a deodorized lower waste tank. The upper and lower compartments can be separated for waste disposal, cleaning and refilling. Be sure to winterize the portable head as needed in freezing climates. For further information, consult your marine head owner's manual for safety, operation and maintenance instructions.

Note on some models an optional deck pump-out fitting is used to pump the waste safely into a landside receptacle. Normally a marina with a pump-out station will screw a hose on the deck waste fitting and vacuum out the waste.



REM024

CENTER WINDSHIELD STRAP

CENTER WINDSHIELD FRAME

WINDSHIELD STRAP IN SNAPPED POSITION



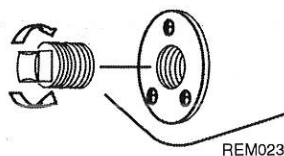
REM044

Operation

It is recommended when docking and idling to snap the center windshield strap as shown. For speeds above idle modes, keep the center windshield in the closed position by turning the two center closures perpendicular to the vertical windshield frame.

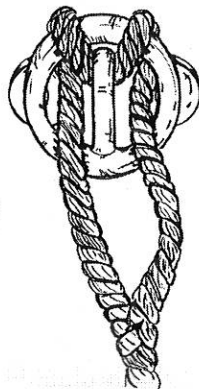
GARBOARD DRAIN PLUG

Be sure to install the drain plug before launching your rig. Let any trapped water exit the drain before installing the plug. Use a wrench to secure it properly. Check for debris and foreign objects at this time. If you store your boat for extended periods of time out of the water, it is a good idea to pull the garboard drain plug.



SKI TOW RING (TYPICAL)

Insert the ski tow line as shown for safe operation. It provides a tight fastening for skiing while allowing the line to be readily removed if needed. Check your tow line for abrasion and tow ring for tightness periodically.



SWIM PLATFORM

On integrated or optional swim platforms you should make periodic inspections of the swim ladder and hardware that supports the platform to insure that all connections and fittings are tight and in good condition. **DO NOT OPERATE THE BOAT WITH PEOPLE OR EQUIPMENT ON THE PLATFORM.** Use caution when operating the boat in reverse to insure that water does not accumulate excessively on the platform or transom.



Chapter 6

Getting Underway

There are many things to consider to make your boating trip safe and enjoyable. This section includes a safety checklist, boarding guidelines, boat loading, and capacity information.

The contents of this section should be read and understood before casting off. Remember, if you have a problem during your cruise, you can't get out and fix it, or walk to safety or for help.

You are responsible for the safety of all passengers, the boat, and any damage the boat or its wake may cause. Always keep passengers from blocking your view so that you do not run into other boats, swimmers, water skiers, personal water vehicles, or aids to navigation.

SAFETY CHECKLIST

The following checks are essential to safe boating and must be performed before starting the engine. Get in the habit of performing these checks in the same order each time so that it becomes routine.



WARNING

DO NOT launch the boat if any problem is found during the Safety Check. A problem could lead to an accident during the outing causing severe injury or death. Have any problem attended to immediately; see your dealer.



Chapter 6

Pre-Operation

- Check the weather report, wind and water conditions.
- Check that the required safety equipment is on board.
- Check that the fire extinguisher is fully charged.
- Check that bilge drain plug is installed properly.
- Check that no fuel, oil or water is leaking or has leaked into the bilge compartment.
- Check all hoses and connections for leakage and damage.
- Check engine and stern drive oil levels.
- Check stern drive pump and trim tab pump fluid levels.
- Check hydraulic steering fluid level.
- Make sure water strainer for raw water intake is clean.
- Check that raw water inlet seacocks are open.
- Inspect exhaust connections for water leaks or gas stains. Tighten loose connections.
- Check the propeller for damage.
- Check the engine cooling water intake pick-up for blockage.
- Check that battery terminals are clean and tight.
- Check electrical circuits (lights, pumps, horn, etc.) for proper operation.
- Check that throttle/shift control is in neutral.
- Check that the steering system operates properly.
- Check that all required maintenance has been performed.

During Operation

- Check gauges frequently for signs of abnormal behavior.
- Check that controls operate smoothly.
- Check for excessive vibration.

Getting Underway

End of Day Shutdown

- Fill fuel tank to prevent moisture due to condensation.
- To prevent marine growth from accumulating on the hydraulic cylinder shafts, make sure trim tabs are UP and outdrives are in the full IN position.
- Lock ignition key switch and remove ignition keys.
- Stow and secure all equipment.
- Pump bilges dry with manual switch. Leave on AUTO when finished.
- Close all inlet seacocks and fuel valves.
- Use fresh water to flush head and engines.
- Inspect the hull and propeller for damage.
- Check for fuel, oil and water leakage.
- Clean any spills, stains, or moisture from boat. Inspect and clean sea strainers.
- Turn battery select switches to OFF.
- Turn off breaker on electrical panel except for the bilge pumps.
- Remove any food, garbage, and wet gear from boat.
- Secure lockers, hatches, and canvas as equipped.
- If keeping boat in water, hook up shore power cord, make sure battery charger light is ON, and check mooring lines.

SAFETY EQUIPMENT

Federal and local laws require certain safety equipment to be on board at all times. In addition, responsible boaters carry other equipment in case of emergency. Check with local boating authorities for any additional requirements over and above federal requirements.

BOARDING

When boarding the boat, always step in. Do not jump. Avoid stepping on fiberglass or other potentially slippery surfaces. Board one person at a time.

Do not board the boat while carrying gear. Set gear on the dock, board the boat and then pick-up the gear.



Boat Loading

The performance of a boat is dependent on load weight and distribution. Passengers should board one at a time and should distribute themselves to maintain trim. Remember to distribute weight from right to left, and also from front to back.



WARNING

All passengers should be carefully seated and not be riding on the bow, bow pulpit, deck, gunwale or rear sun deck while underway. Passengers riding in the bow should exercise extreme caution. During rough weather operation, passengers in the bow should move to the aft passenger seats.

- Avoid excess weight in the bow or stern.
- Securely stow all extra gear in stowage areas to prevent load shifting. Do not stow gear on top of safety equipment; safety equipment must be quickly accessible.
- In adverse weather, reduce the load in the boat. People/load capacity ratings are based upon normal boating conditions.
- Do not use the engine unit as a boarding ramp. Make sure engine is off when swimmers, divers, and skiers are boarding to prevent injury.

Capacity

All Regal boats have been certified by the NMMA (National Marine Manufacturer's Association). The certification plate will give you maximum rated capacity. The person/load capacity is determined by various formulas. Actual capacity is determined by the availability of proper seating on the boat. Acceptable seating determines the number of passengers, not the overall load capacity.



WARNING

Do not exceed the USCG certified maximum capacities under any circumstances. Overloading will reduce freeboard and increase the likelihood of swamping, especially in heavy seas. Overloading causes handling to become sluggish, making it difficult to react quickly.

Chapter 7

Running

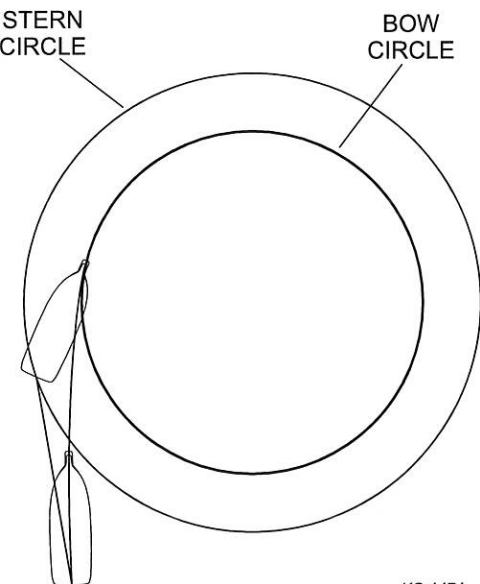


We urge you and all others operating the boat to seek certified instruction from the local boating authorities.

This section is designed to present the most basic operational principles. It is NOT intended to cover all conditions encountered during operation. Therefore, the principles presented in this manual are limited to the facts related directly to the operation of the boat, while the responsibility for the proper application of these principles belongs to you.

MANEUVERING TECHNIQUES

Steering response depends on three factors: engine position, motion and throttle.



Like an automobile, high speed maneuvering is relatively easy and takes little practice to learn. Slow speed maneuvering, on the other hand, is far more difficult and requires time and practice to master.

When making tight maneuvers, it is important to understand the effects of turning. Since both thrust and steering are at the stern of the boat, the stern will push away from the direction of the turn. The bow follows a smaller turning circle than the stern.



Chapter 7

The effects of unequal propeller thrust, wind, and current must also be kept in mind. While wind and current may not always be present, an experienced boater will use them to his advantage. Unequal thrust is an aspect shared by all single engine propeller-driven watercraft. A clockwise rotation propeller tends to cause the boat, steering in the straight ahead position, to drift to starboard when going forward, and to port when going backward. At high speed, this effect is usually unnoticed, but at slow speed; especially during backing, it can be powerful. For this reason, many veteran boaters approach the dock with the port side of the boat toward the dock, if possible.

SALT WATER

If boat is moored in salt water for long periods, tilt the engine out of the water (except during freezing temperatures). After removing the boat from the water, lower the engine to the run (down) position until the cooling system has drained thoroughly. Hose the entire hull down with fresh water and wipe dry.

Today's engines are built for operation in either fresh or salt water. Fresh water internal flushing is not normally required, however, it may be desirable after use in salt, polluted, or brackish water. Your dealer will assist you in securing the appropriate engine flushing device.

FREEZING TEMPERATURES

When the boat will be operated and left in the water and temperatures drop below freezing, the engine must remain in the tilted down (submerged) position at all times to prevent water in the engine from freezing. When the boat is removed from the water, drain the engine completely.

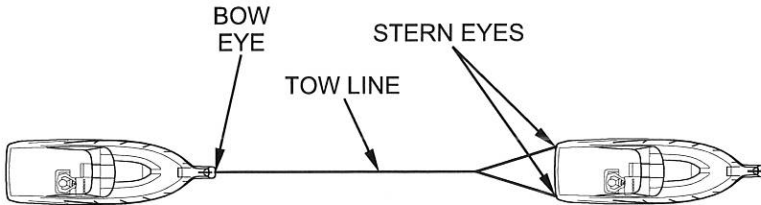
TOWING PROCEDURE

If seas are rough, it may not be easy to extend the tow line from one boat to another. In these cases, use a light throwing line with a weight on one end and with the heavier towing line secured to it.

Never attempt to tow a much larger or grounded vessel. Because of the tremendous stress caused by towing, use a tow line that is rated at least 4 times the gross weight of the boat being towed. Tow ropes must always be in good condition, free of any cuts or abrasions.

Running

Attach tow line to the bow eye on the disabled boat. Attach the opposite end of the bridle only to the stern eyes of the tow boat. Wrap the bridle with chafing gear where it rubs against the boat or any corners. Leave at least 2 boat lengths between the boats for adequate movement.



KC-2115



When towing, use only the bow and stern eyes; never use cleats, handrails, etc. Do not allow anyone to be in line with the tow rope. If the rope should break or pull free, a dangerous recoil could occur resulting in severe injury or death to anyone in its path.

Adjust the tow line to match wave action. Keep the boats on the crest or in the trough of the waves at the same time. In protected, calm waters, shorten the line for better handling. Always tow at moderate speed, allowing for adverse wind and wave conditions. Have the operator of the towed boat steer with you if possible.

If you need a tow, or wish to tow another boat, use great care. The boat structure can be damaged by excessive pulling strain. You should always offer help to a boat in trouble. However, towing a capsized, grounded, or hull damaged boat is dangerous. Give assistance to the occupants; then call the proper authorities.



ANCHORING

Dropping Anchor

There are many types of anchors available on the market. The choice of one anchor over another depends on many factors. An anchor will usually hold best in a mixture of mud and clay or in hard sand. For more information on anchors consult your dealer.

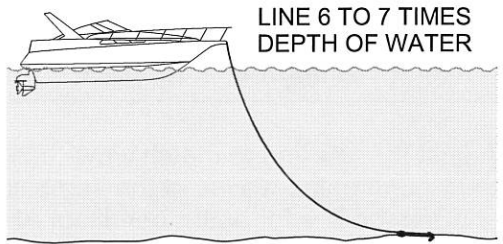


WARNING

Always anchor from the bow; NEVER anchor from the stern. A small amount of current will make the boat unsteady...a strong current can pull a boat, anchored by the stern, under water and keep it there.

When anchoring, it is helpful to keep a few guidelines in mind.

- Make sure the line is tied to the anchor and tie the other end of the line to the forward cleat or bow eye.
- Head the boat into the wind or current over the spot where you want to lower the anchor.
- Stop the boat before lowering the anchor.
- When the anchor hits bottom, slowly back up the boat, keeping tension on the line. Let out an anchor line that is 6 to 7 times the depth of the water. For example, if you are in 3 m (10 ft.) of water, let out 18 to 21 m (60 to 70 ft.) of line.
- Secure anchor line to the bow cleat. Pull on line to make sure anchor is holding.
- Occasionally check your position against the shoreline. If the anchor is dragging and you are drifting, reset the anchor.



KC-1535

Weighing (Pulling In) Anchor

Start engine and move forward until anchor line is straight up and down. Pull hard to lift anchor from the bottom material.

If the anchor is stuck, attach anchor line to the bow cleat so that it is taut. The up and down motion of the bow from wave action may lift the anchor from the bottom. If the anchor remains stuck, let out a few more feet of line and attach it to the bow cleat. Slowly maneuver the boat around the anchor until the anchor pulls loose. Be sure to keep the line tight during this procedure.

PERFORMANCE BOATING

Some boat models; especially those with high horsepower engines, are capable of truly exhilarating performance. Don't be tempted to push your boat to its limits until you are completely familiar with the boat's operating characteristics. The operator should have at least 10 hours of experience with the boat before any extended full throttle operation.

Here are some guidelines for performance operation. Read them, practice them, and soon you will be operating your boat to its full capability.

Before Running

- Keep the bottom clean and free of scum, barnacles and other growth. Growth on the hull can slow the boat down considerably.
- Prepare the boat. Be sure all gear is properly stowed and compartments are latched.
- Weight distribution affects performance. Keep weight in the boat low and evenly distributed. Remove unnecessary weight and keep on shore.
- The propeller should be of the proper pitch to turn the recommended RPM rating for the engine and of the proper type for your average load and individual requirements. Your dealer can help you select a performance propeller.



When Underway



WARNING

Keep one hand on the wheel and the other on the throttle controls at all times. If the boat begins to operate in an unsafe way, pull back on the throttle and trim the engines IN at the same time. Failure to maintain control could result in severe injury or death.

- Raise the trim tabs above the boat bottom.
- Increase speed. The bow will start to come down.
- When the bow begins to fall, trim the engines out. Trimming the engines out at speed will cause the boat to rise up. The boat will begin accelerating without adjusting the throttle because less of the boat is dragging in the water. Steering will become easier because the propellers have less torque.



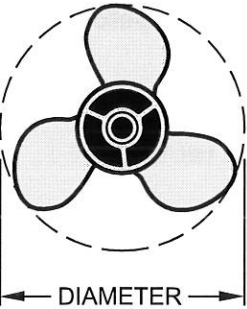
WARNING

Do not trim the engine out too far or the boat may begin to “porpoise” (bounce up and down). Porpoising reduces control and visibility and lowers top speed and fuel efficiency. Failure to maintain control or visibility could result in serious injury or death.

- Watch the tachometer to keep the engine within the full throttle operating range. See the engine operator’s manual for the proper tachometer reading at full throttle.

High speed operation on smooth water is very stable, but quick reactions and adjustments are needed to maintain control. Know your limits and stay within them. Always keep one hand on the steering wheel and the other on the throttle; constant adjustments are necessary for rapidly changing conditions. Small inputs of throttle and steering are exaggerated at high speeds. Depending on the speed, keep watch well ahead so that you may have enough time to react.

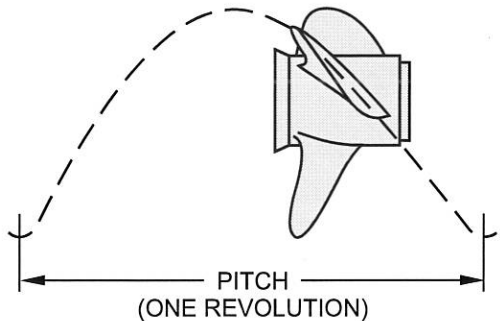
PROPELLERS



KC-1580

The propeller converts the engine's power into the thrust needed to propel the boat. Care and selection of your propeller is very important to proper boat operation. Propellers are identified by two numbers, such as 13 x 19, and a material identification, such as aluminum or stainless steel. In the number sequence, the first number is the diameter of the propeller and the second is the pitch.

Pitch is the angle of the blades expressed in the theoretical distance a propeller travels in each revolution. In the above example, the pitch is 19, or each revolution of the propeller pushes the boat 483 mm (19 in.) through the water. A 19 pitch is considered "higher" pitched and a 15 pitch propeller is considered "lower" pitched.



KC-1581

Keep these guidelines in mind when selecting a propeller:

- There are many different propeller designs for specific operating characteristics, including the number of blades, relief holes, cupping, etc. Do not attempt to change propellers until after you have a chance to determine your average load and individual requirements. Your dealer is best qualified to help you select a propeller.
- Engine RPM must be within the recommended operating range. Refer to the engine operator's manual.
- Higher propeller pitch reduces: RPM, acceleration, engine noise, and usually improves fuel economy and top speed.
- Lower propeller pitch increases: RPM, acceleration, engine noise, reduces fuel economy and top speed.



WARNING

To prevent accidental start-up, complete the following before installing or removing the propeller:

- **Put the remote control in the “NEUTRAL” position.**
- **Put the main switch in the “OFF” position and remove the key.**

Failure to observe this warning could result in severe injury.

A smaller pitch propeller should be selected for water skiing or for heavy loads. A smaller pitch propeller will develop more thrust for raising skiers quickly. When a skier has fallen, or a skier is not being towed, it is important that the operator watch the tachometer to make sure engine RPM does not continuously exceed the maximum full throttle RPM range of the engine.



WARNING

DO-NOT use your hand to hold the propeller when loosening the nut. Put a wood block between the cavitation plate and the propeller blade to prevent the propeller from turning. Failure to observe this warning could result in injury.

Problems associated with propellers include ventilation, cavitation, and blow-out. These problems have similar symptoms and are best diagnosed by an expert. If you think you have a propeller related problem, consult your dealer.

Chapter 8

Care and Maintenance



This section describes how to care and maintain your boat. It includes information about maintaining electrical components, corrosion protection, and general maintenance. Use the service/maintenance log provided to track maintenance performed.

REPAIRS AND MODIFICATIONS

Your boat has been designed for safety in the harsh marine environment and thoroughly tested and certified for compliance with applicable safety standards. Because of the possibility of interference with the design of the boat, owner installation of additional equipment or modification of factory equipment is not recommended.

In addition, do not attempt to make repairs unless you are certified to do so, have the necessary authorized repair information, and use approved marine replacement parts.

Your dealer is qualified to make such repairs, additions or modifications to your boat that will not compromise safety, design integrity, or warranty coverage.

ELECTRICAL

Battery



WARNING

Batteries contain sulfuric acid which can cause severe burns. Wear protective clothing to avoid acid contact with skin, eyes, etc. Failure to observe this warning could result in severe injury.



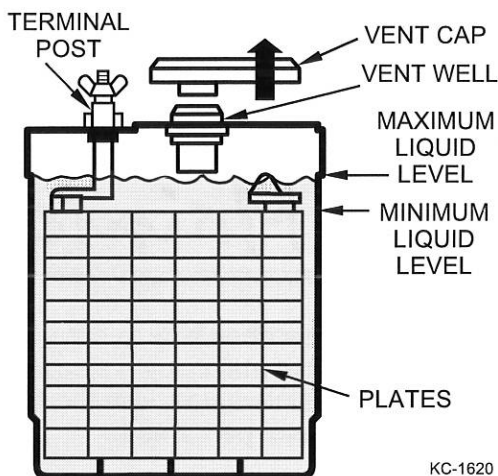
Chapter 8

Check the battery frequently for signs of corrosion. If corrosion is evident, clean terminal posts with a baking soda and water solution and a wire brush. Before cleaning, remove the vent caps and seal the vent wells with corks to prevent the solution from getting inside the battery.

NOTICE

Some batteries are sealed, and cannot be filled.

Check the fluid levels in the cells. Usually, a level approximately 6 to 13 mm (1/4 to 1/2 in.) above the plates is sufficient. If needed, fill with distilled water; do not overfill!



WARNING

Batteries produce explosive hydrogen gas. Never attempt starting your engine with jumper cables under any circumstances. Keep all sparks, flames and smoking materials away from batteries. Risk of spark at the battery post igniting gasoline or hydrogen fumes is too great. Always wear eye protection when near batteries and have adequate ventilation when charging. An explosion can cause blindness or other serious injuries.

Batteries are perishable products and will self-discharge. If you operate your boat sparingly, you may want to charge your battery occasionally. To recharge, remove the battery from the boat and remove the battery caps (when applicable). Recharge the battery according to the directions enclosed with your battery charger. When installing the battery in the boat, make sure the battery is secured in the battery box.

Circuit Breakers and Fuses

All electrical circuits are protected from overload by the use of fuses or circuit breakers. In the event of an overload or short circuit, the fuse will blow or circuit breaker will trip. If a circuit continuously overloads under normal operating conditions, have your boat inspected by the dealer immediately.

Care and Maintenance



WARNING

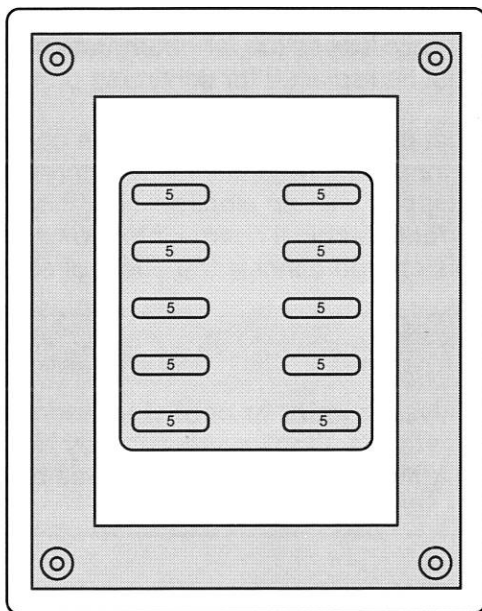
Never exceed the recommended fuse sizes or bypass the fuse safeguard. Always install the proper (type and rating) fuses whenever replacing or changing fuses. Continuous fuse/breaker failures indicate a severe problem and requires immediate attention. Failure to install correct fuse may result in damage to the electrical system or severe personal injury.

Some boat models have each individual circuit protected with a circuit breaker located next to the switch. To reset a tripped circuit breaker, switch OFF the circuit, wait about one minute for the breaker to cool, push the breaker button fully, and switch ON the circuit.

Some boat models have circuits protected by fuses. If the fuse should blow-out, locate the fuse block behind the instrument panel. Use a fuse removal/installation tool to replace the fuse.

NOTICE

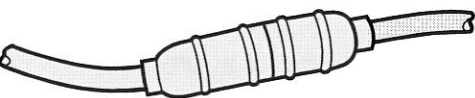
The electrical system is designed to protect you from short circuits and overload. Any modifications to the system, such as adding electrical accessories, should be done by a qualified technician.



AUTOMOTIVE STYLE
FUSE PANEL

KC-1635

TYPICAL IN-LINE FUSE HOLDER



(TWIST AND PULL TO OPEN)

KC-1640

Some installed accessories, such as the stereo, have an additional fuse located in the positive lead of the stereo. Some in-line fuse holders can be found near the battery.



CORROSION PROTECTION

Galvanic Corrosion

Galvanic corrosion (electrolysis), is the break-up of metals due to the effects of electrolytic action. When two dissimilar metals are immersed in a conductive fluid such as salt water, an electric current is produced, much like a battery. As the current flows, it takes with it tiny bits of the softer metal. If not stopped, a great deal of damage could occur.

If you operate in salt, polluted, or brackish waters, your boat should be equipped with a transom mounted zinc anode to prevent damage to those metal parts coming in contact with the water. By design, the anode is self-sacrificing. It is slowly eroded away by electrolytic action and requires periodic inspection for deterioration. If the zinc shows extreme erosion, it must be replaced for continued protection.

Most engines are equipped with one or more zinc anodes which must also be inspected regularly for deterioration. Some boat models may be equipped with an electronic cathode system. This system emits a low current electrical charge into the water close to the metal components. This charge cancels the effect of electrolysis.

CAUTION

Never paint or coat zinc anodes or cathodes with any substance. Once covered, they do not provide protection from galvanic corrosion. Replace anodes if they have deteriorated 50% or more.

Salt Water Corrosion

The entire boat should be rinsed with fresh water and washed immediately after use in salt water. If the boat is used primarily in salt water, wax the hull monthly and apply corrosion inhibitor to all hardware. See your dealer for products suitable for the marine salt water environment. Fresh water internal flushing is recommended when used in salt, polluted, or brackish waters. Flush the entire engine cooling system with fresh water for at least 5 minutes after use in these waters. See your dealer for appropriate flushing devices.

Care and Maintenance

GENERAL MAINTENANCE

Marine Growth

If accelerated marine growth is a problem in your area, an anti-fouling bottom paint may be necessary to slow growth and prevent gelcoat damage. Before selecting a bottom paint, talk with other boaters and your dealer to determine which product works best in your area. Many local variables can affect the selection of paint. Be sure to follow the paint manufacturer's directions exactly.

Cleaning

Periodic cleaning is the best way to keep your boat looking new. Regular washing and waxing keep dirt and scum from building up and deteriorating the finish. Keeping your boat in "show room" condition means greater personal satisfaction and higher resale value. Special cleaning products are available from your dealer to remove mildew.

Hull

When washing the boat, be sure to use a mild detergent and warm water solution. DO NOT use abrasive cleaners, solvents, ammonia or chlorine as these will damage the gelcoat surface. Under extreme conditions, special cleaners may be used to remove marine growth, such as scum or algae, from the hull; see your dealer.

Waxing the entire gelcoat surface at least twice a season is recommended for all climates. Use of a specially formulated marine gelcoat wax will prevent color fade and soil and scum adhesion. If the gelcoat has chalked or faded from lack of proper maintenance, buffing may be necessary to bring back the shiny appearance. Hand buffing with #7 rubbing compound or power buffing with glazing compound #1 will quickly restore the surface.

Interior Fabric

Clean interior fabrics with dry cleaning fluid approved for use with soft fabrics. Follow the label instructions carefully. Be sure to test cleaners in an unseen area first.

CAUTION

Dry cleaners require adequate ventilation during use. Open all hatches and windows before application.



Chapter 8

Use a soft cleanser to clean marks or stains on wallpaper; they will usually come off with soap and water. Lightly rub the mark or stain with a sponge or soft cloth and dry with a clean cloth.

Upholstery

Regular washing with mild detergent and warm water or non-solvent type automotive vinyl cleaner is sufficient to keep the cushions, canopy top, and other vinyl coverings in good condition. Keep the cushions from becoming soaked and dry off thoroughly after washing to prevent mildew accumulation after the boat is covered. Prop the cushions up in the boat when covered to allow air circulation and spray with mildew repellent. Lubricate canopy top snaps with petroleum jelly.

For tough stains on vinyl such as adhesive, rust, etc., use a citrus cleaner followed by a mild detergent and warm water. For ink stains, apply denatured alcohol and wipe off. Note that some products such as suntan lotion, shoe polish and wet leaves may stain permanently.

Although not always convenient, minimizing your boat's contact with damaging ultraviolet (UV) rays and storing removable seats and canopies indoors when not being used will increase the longevity of vinyl upholstery.

CAUTION

Certain automotive, household and industrial cleaners can cause further damage and discoloration. Solvents and dry cleaning fluids, or products that contain dyes such as waxes, should be used with caution. Whenever cleaning stubborn stains, be sure to test the treatment in an unseen area first. The following stain treatments should be used with discretion. Between steps, be sure to rinse thoroughly with plenty of clean water and allow to dry.

Care and Maintenance

REGAL CANVAS CARE

The boat top and other canvas items supplied on your Regal boat are manufactured from top quality materials to provide you with years of trouble free service. The following information on the care, cleaning and proper storage of the fabrics that make up your canvas is being provided to help you maintain the appearance and ease of operation.

SUNBRELLA FEATURES: Used on most Regal tops, aft curtains, camper enclosures, bow tonneaus and cockpit covers. Sunbrella is a woven fabric material made from 100% solution dyed acrylic fiber. It is very color fast and will withstand long term exposure to the sun (ultraviolet) without excessive fading.

SUNBRELLA CLEANING INSTRUCTIONS: Sunbrella fabric should be cleaned regularly before substances such as dirt, roof particles, etc., are allowed to accumulate and become imbedded in the fabric. The fabric can be cleaned without being removed from the installation. Simply brush off any loose dirt, roof particles, etc., hose down and clean with a mild solution of natural soap in lukewarm water (no more than 100 degrees F). Rinse thoroughly to remove soap. **DO NOT USE DETERGENTS.** Allow to air dry.

For heavily soiled fabrics, remove the top from frame. Soak the fabric in a solution that has been mixed to the following proportions: 1/2 cup of Clorox® and 1/4 cup of Ivory® or Lux® soap (liquid or flakes) per each gallon of lukewarm water. The water should be no warmer than 100 degrees F. Allow the fabric to soak until the bleach has killed the mildew and the stains can be brushed out with a common kitchen scrub brush. Rinse the fabric thoroughly in cold water to remove all the soap. This may require several rinsings. Incomplete rinsings can cause deterioration of sewing threads and prohibit the fabric from being properly retreated. Allow the fabric to air dry completely. **DO NOT STEAM PRESS OR AIR DRY IN A GAS OR ELECTRIC DRYER.** Sunbrella is thermoplastic or heat sensitive. Excessive heat can damage and shrink the fabric.

This method of cleaning may remove part of the water and stain repellents that was applied to the fabric during its manufacture. It is recommended to retreat with such products as Apseal® and Uniseal®. We do not recommend any wax base treatments such as Thompson's Water Seal® or any of the silicone products such as SC-15® or Aqua-Tite®. Wax based products prevent the fabric from breathing and encourage mildew growth while the silicone products interact with the original fluorocarbon finish and seem to cause a rapid loss of water repellency. We have not found scotchguard® to be a very effective product for restoring water repellence to Sunbrella. It works well short term but doesn't maintain its performance very long.



Chapter 8

SUNBRELLA CARE: Never store canvas in an unventilated, moist area. Always roll the canvas instead of folding. This is of particular importance on side curtains or any part with the clear vinyl “glass”. Roll the top carefully around the bows and cover with the storage boot provided.

CLEAR VINYL “GLASS”: The clear vinyl “glass” used on side curtains, aft curtains, windscreens and camper enclosures is very susceptible to heat and cold. Keep vinyl side curtains from touching the bows (tubing) to minimize burning the vinyl. If boat is stored with top, side, and aft curtains in place heat build up inside the boat may discolor the vinyl.

CLEAR VINYL “GLASS” CARE & CLEANING: Using a soft cloth, clean with a solution of Ivory® or Lux® soap, liquid or flakes, and lukewarm water. Allow to air dry. Never use any type of abrasive cleaner as it will scratch the glass. There are many cleaners and scratch removers on the market specifically for clear vinyl “glass”. Any of them should give satisfactory results.

ZIPPERS: When zippers are new they can be a little difficult to zip. Zip carefully without forcing. They will loosen with use. A zipper lubricant may be used to help new zippers as well as maintaining long trouble free service. The most vulnerable part of the zipper is the starts. Use care when starting zipper to prevent damage.

SNAP FASTENERS: All fasteners should be unsnapped as close to the button as possible. Never remove canvas by pulling roughly on one edge of the material. This can damage the canvas as well as the fasteners.

On some canvas applications a special snap called PULL-THE-DOT is used. It is a directional snap that will release only when lifted from the dot marked on button top. If not lifted properly it will not release and damage to the canvas is possible.

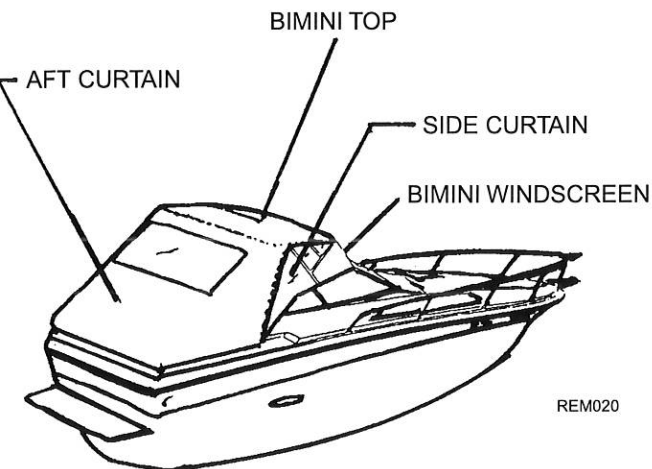
In severe environments it may be helpful to coat all the snaps with a small amount of petroleum jelly to prevent corrosion build up.

Carpet

Occasional vacuuming and washing with mild detergent and warm water or household carpet cleaners will keep the carpet clean. Thoroughly hose the detergent out of the carpet and into the bilge. This is usually the best time to clean the bilge. Let the carpet dry in the sun to prevent any mildew or odor caused by moisture.

Care and Maintenance

Bimini Top Installation (Typical)



To install the bimini top, unzip the top boot and remove it from the bimini top. Store it for future use. Unroll the canvas and snap the front canvas snaps in place. Pull the black canvas strap tight aft on the port side and hook the end in the eyelet. This will tighten the framework and canvas. Do the same on the

starboard side. Attach the front windscreen. It may be necessary to unzip it to access some of the snaps. Zip the windscreen to the bimini top. Install the side curtains. They are marked for port and starboard sides. If not a visual look will identify the placement. The aft curtain is installed last. It is a good idea to work out of the boat into a corner when fastening the aft curtain for easy exiting. Remember to take down the canvas when towing and above idle speeds. Roll all canvas part instead of folding them to protect the clear plastic window material. **Regal does not recommend trailering your boat with the canvas up. Regal recommends the bimini top in the 45 degree boat mounted position for in water cruise use only.**



Chapter 8

Cockpit Cover

The optional cockpit cover installs over the windshield and snaps to the deck. To install the cockpit cover note that on the bow end of the cover there is a seam which separates the port and starboard sides. Align this seam with the center snap below the windshield. Complete snapping the canvas to the outside and then down each gunnel to admidships.

Your boat may have one or two cockpit poles. Their purpose is to keep the canvas tight. This pole(s) is adjustable by pulling it to the desired length and then tightening the thumb screw. Notice in the center of the cockpit cover lengthwise one or two areas of reinforced material. These are for the cockpit cover poles. Insert the pole(s) and adjust as needed. You may find it helpful to mark the pole(s) for correct placement.

Continue to snap the cockpit cover to the deck snaps. When you reach the rear corner leave enough room to allow a safe exit. **Remember, Regal does not recommend trailering your boat with the canvas up.**



REM049

Care and Maintenance

Windshield

A clean windshield is important. If your boat is equipped with a glass windshield, applying a non-abrasive glass cleaner with a soft cloth will remove most dirt and smudges. Smoked plexi-glass or plastic windshields should be cleaned with a mild soap solution and damp cloth only. Harsh detergents, solvents, chemicals or dry cloths used on any glass or plastic windshield will scratch the surface.

Bilge

Your bilge accumulates oil and greasy dirt over a period of time and should be cleaned out. Usually, ordinary soap and water does not remove the accumulation, and something stronger is necessary. Consult your dealer for recommendations on special bilge cleaning products.

Bilge Pump(s)

Periodically check the bilge pump(s) inlet screens for debris. Foreign materials can clog the screen or become lodged in the bilge pump impeller, which can cause the pump to malfunction. Inspect all clamps and hoses for tightness on a regular basis.

Toilet

Basic maintenance on the toilet involves the following:

- Use a nonabrasive cleaner for keeping the bowl clean.
- A light coating of a general purpose marine lubricant on the pump rods and slides will reduce friction of moving parts.
- Use recommended deodorant and lubricant for the internal parts of the head.

Detectors

The gas vapor detector and Carbon Monoxide (CO) detector require little maintenance. Consult the owner's manual for periodic testing procedures.

Trim Tabs

Inspect the trim tab pump periodically for fluid level. Fill with recommended fluid until full (if needed). Also inspect trim tabs for loose fasteners, leaking cylinders, and harness connections.



Chapter 8

Alcohol Stoves

Carefully read and follow manufacturer's operating instructions supplied with your stove, and observe the following:

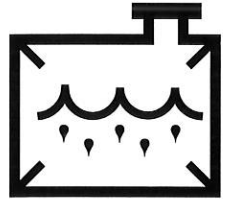
- Use only denatured alcohol labeled specifically for marine use.
- Do not operate the stove while underway.
- Do not fill stove near an open flame or hot object.
- All alcohol spilled should be wiped up prior to lighting the stove.

CAUTION

If your boat is left in the water continuously for a period of time exceeding two weeks, we recommend the use of a good quality barrier coating system and bottom paint. See your dealer for more information.

Holding Tank

If your boat has an optional waste holding tank installed, various chemicals are available to control odors and help break down solids. Consult your marine dealer as to what to use. After the holding tank is emptied, fill tank with fresh water and pump it out again to rinse.



KC-4055

NOTICE

Overboard discharge of waste should only be used in approved areas.

There are many marinas that are certified to pump out your holding tank.

Stainless Steel and Chrome

Stainless steel and chrome plated parts are not totally resistant to corrosion. Occasional cleaning and polishing with a marine chrome and stainless polish will maintain and extend the useful life. In salt water areas, rinse all hardware with fresh water and apply a light coating of corrosion inhibitor oil to enhance appearance. Check hardware tightness at least once a season.

Care and Maintenance

FRESH WATER SYSTEM

The following maintenance actions should be performed monthly to keep the fresh water system clean and sanitary:

- Drain the fresh water tank completely (using all faucets, showers, etc.). Refill tank with at least 20 gallons of clean, fresh water and drain again.
- Clean fresh water pump inlet filter screen (if equipped).
- Replace fresh water system filter(s) (if equipped).
- Clean city water inlet strainer (if equipped).
- Flush city water system (using all faucets, showers, etc.).

If water in the tank has been allowed to stagnate and you suspect that the fresh water system may be contaminated, sanitize the system. To sanitize:

1. Drain the fresh water tank completely (using all faucets, showers, etc.).
2. Mix a solution of 1/4 cup household bleach to 1 gallon of water for every 15 gallons of tank capacity. Pour the solution into the fresh water tank.
3. Fill the tank with clean, fresh water.
4. Turn fresh water pump "ON" and bleed air from all faucets, showers, etc.
5. After approximately 3 hours, drain the system completely.
6. Flush the system with one full tank of water.
7. Fill tank with clean, fresh drinking water.

If you can smell or taste bleach in the water:

1. Drain the system completely.
2. Mix a solution of one quart of white vinegar to 5 gallons of water. Pour the solution into the fresh water tank.
3. Allow the solution to remain in the tank until approximately one hour of cruising time is logged.

NOTICE

Boat motion will "slosh" the vinegar/water solution to help clean the tank.

4. Allow the solution to remain in the tank for at least one week.
5. Drain the fresh water system completely.



Chapter 8

6. Flush the system with one full tank of water.
7. Fill the tank with clean, fresh drinking water.

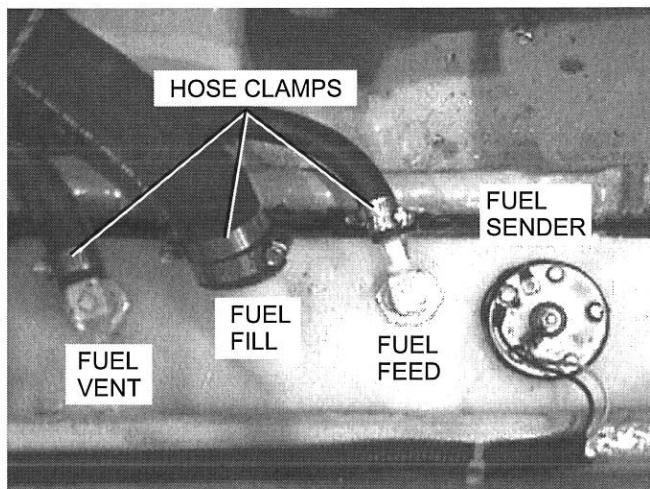
FUEL SYSTEM

Fuel vents are normally located in the hull or transom below and in the same general area as the fuel fills. Check to see that the fuel fill and vent lines are free of obstructions and kinks. Be sure to check the fuel filter often and clean as needed.

Fuel lines, vent hoses, and drain hoses should be checked frequently for leaks. Some models are equipped with removable inspection plates for fuel system component inspection. If a leak occurs around the fitting, then tightening of the hose clamps may be all that is necessary. However, if the leak continues, replace the hose immediately to prevent a build-up of fluids or gases. Surface cracking on the hose indicates wear, and replacement is recommended. Use fuel system parts certified for marine use only; do not substitute automotive parts in marine application.

Fuel Tank Maintenance

Periodically inspect the fuel tank components for loose clamps at the vent, fill and feed locations. Examine each hose for signs of deterioration and leakage. Check the fuel sender for loose screws, nuts, and leaks at all areas of contact. Also, inspect the fuel tank for signs of leakage or abrasion. Tighten all components as needed. For further information, contact your closest Regal dealer or marine professional.



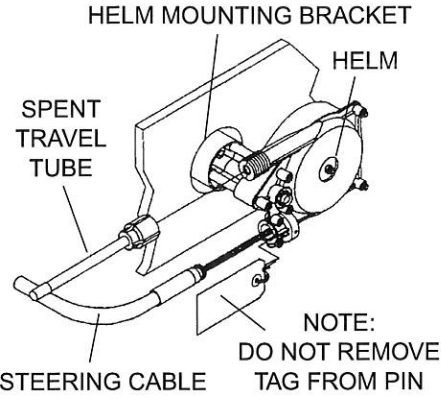
Typical Fuel Tank Shown

REM021

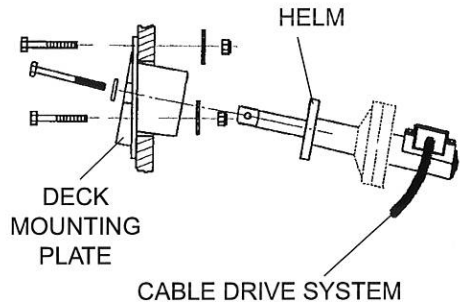
Care and Maintenance

STEERING SYSTEM

The steering system is the primary link for engine control and must be inspected and maintained regularly. The hardware at both the helm and engine must be checked frequently for tightness.



SAFE-T HELM STEERING SYSTEM



RACK STEERING SYSTEM

REM-015A



Chapter 8

MAINTENANCE SCHEDULE

This maintenance schedule chart provides only rough guidelines that will make you aware of areas that need periodic attention. Priority guidelines are listed by type.

Type A - Maintenance after 48 hours of new boat or dry storage launch.

Type B - Periodic maintenance checks.

Type C - Maintenance performed after the first 25 hours of operation.

Type D - Maintenance performed every 6 months/100 hours of operation.

| COMPONENT/SYSTEM | TYPE A | TYPE B | TYPE C | TYPE D |
|----------------------------------|--------------------------------|-----------|-----------|-----------|
| Engine Room | | | | |
| Maintenance Per Engine Manual | As Recommended By Manufacturer | | | |
| Inspect Water Hoses | X | X | X | X |
| Check Propeller For Nicks | | | | X |
| Inspect Thru-Hulls For Leaks | X | X | X | X |
| Inspect Seacocks For Leaks | X | X | X | X |
| Check Exhaust For Leaks | X | X | X | X |
| Check Trim Tab Reservoir Levels | X | X | | X |
| Check Trim System For Leaks | X | X | | X |
| Control System | | | | |
| Check Throttle/Shift Adjustments | | X | X | X |
| Test Neutral Safety Switch | | X | | X |
| Lubricate All Control Cables | | | | X |
| Lubricate Remote Control Box | | | | X |
| Lubricate Outdrive Shift Cable | | | | X |
| Check Control Box Fasteners | | X | | X |

Care and Maintenance

| COMPONENT/SYSTEM | TYPE A | TYPE B | TYPE C | TYPE D |
|---------------------------------|-----------|-----------|-----------|-----------|
| Steering System | | | | |
| Check All System Fasteners | X | X | X | X |
| Inspect Cable For Cracks | | X | X | X |
| Lubricate System Components | | X | | X |
| Electrical System | | | | |
| Inspect/Clean Battery | | X | | X |
| Check All 12 Volt Equipment | X | X | X | X |
| Check All 120 Volt Equipment | X | X | X | X |
| Inspect Shore Power Cord | | X | X | X |
| Inspect Wiring Connections | | X | | X |
| Fuel System | | | | |
| Clean Engine Fuel Filters | | X | X | X |
| Check Hoses/Chafing & Leaks | X | X | X | X |
| Fresh Water/Waste System | | | | |
| Flush Entire System & Tank | | | | X |
| Clean Fresh Water Pump Filter | | X | | X |
| Inspect System For Leaks | | X | | X |
| Sanitize Waste System | | X | | X |
| Bilge System | | | | |
| Tighten Hull Drain Plug | X | X | X | X |
| Check Bilge Pump Operation | X | X | X | X |
| Check Bilge Blower Operation | X | X | X | X |



Chapter 9

Troubleshooting

The following diagnostic charts will assist you in finding and correcting minor mechanical, electrical and fuel problems. For engine problems, refer to the manufacturer's information located in your owner's pouch.

Some problems may require using special tools and advanced technical knowledge. Contact a marine professional or your Regal dealer.

FUEL SYSTEM DIAGNOSTIC CHART

| PROBLEM | POSSIBLE CAUSE | POSSIBLE FIX |
|---|------------------------------|---|
| Engine Not Starting Or Running Correct | Fuel Tank Vent Obstructed | Clean Vent Hose & Fitting. Check For Kinks |
| | Fuel Line Blocked | Inspect Fuel System For Kinked Hose |
| | Lack Of Fuel | Clean Filter & Check Fuel Supply Level Check For A Stuck Anti-Siphon Valve |
| | Water In Fuel | Purge Water |
| | Clogged Fuel Filter | Replace filter Element |
| | No Fuel Reaching Engine | Check fuel pump, All Filters, Fuel Tank For Flange Cracks |



Chapter 9

REMOTE CONTROL DIAGNOSTIC CHART

| PROBLEM | POSSIBLE CAUSE | POSSIBLE FIX |
|------------------------------------|---|--|
| Shift Control Stiff/Inoperative | Corroded Cable | Clean/Lubricate Cable |
| | Kink In Cable | Replace Cable |
| | Cable Broken | Replace Cable |
| | Control Box Jammed | Repair/Replace Box |
| Throttle Control Inoperative | Worn control cable | Replace Cable Stiff/ |
| | Cable Binding | Follow Cable Routing; Look For Bent Or Pinched Cable |
| | Broken Cable | Replace Cable |
| | Control Worn Or In Need Of Lubrication | Refer To Information Supplied By Control Manufacturer. Lube Cable |

INSTRUMENT DIAGNOSTIC CHART

| PROBLEM | POSSIBLE CAUSE | POSSIBLE FIX |
|-------------------------------------|----------------------------|-----------------------|
| Gauge Inoperative Or Reads Wrong | Faulty Gauge | Replace Gauge |
| | Wiring To Gauge Faulty | Inspect/Repair Wiring |
| | Incorrect Or Faulty Sender | Replace Sender |

PERFORMANCE DIAGNOSTIC CHART

| PROBLEM | POSSIBLE CAUSE | POSSIBLE FIX |
|---------------------|---------------------------|--|
| Excessive Vibration | Material Obstructing Prop | Remove Material By Reversing Engine |
| | Bent Propeller Blade | Replace Propeller |
| | Bent Propeller Shaft | Contact Regal Dealer |
| | Propeller Hub Faulty | Replace Propeller |

Troubleshooting

| PROBLEM | POSSIBLE CAUSE | POSSIBLE FIX |
|------------------|--------------------------|----------------------|
| Poor Performance | Engine Trim Incorrect | Adjust Trim |
| | Uneven Load Distribution | Adjust Load |
| | Engine Problem | Contact Regal Dealer |

DC ELECTRICAL DIAGNOSTIC CHART

| PROBLEM | POSSIBLE CAUSE | POSSIBLE FIX |
|--|--|---|
| 12 Volt System Not Working | Battery Selector Switch In The "Off" Position | Turn Selector Switch On |
| | Weak Or Dead Battery | Recharge/Replace Battery |
| Battery Not Charging (Engine Running) | Engine Alternator Belt Loose | Tighten Belt |
| | Faulty Alternator | Repair/Replace Alternator |
| Battery Will Not Hold A Charge | Faulty/Old Battery | Replace Battery |
| 12 Volt Equipment Not Working | Circuit Breaker For Device Is "OFF" | Switch Breaker To "ON" |
| | Weak Or Dead Battery | Change Battery Selector Switch Position; Charge Up Battery |
| | Faulty Connection/Loose Wire | Check 12 Volt Connections; Repair/Tighten As Needed |
| | Internal Electrical Short | Replace Device |



AC ELECTRICAL DIAGNOSTIC CHART

| PROBLEM | POSSIBLE CAUSE | POSSIBLE FIX |
|---|---|---|
| No AC Power | Main Shore Power Breaker Tripped Or "Off" | Turn Breaker "ON" |
| | Power At Dock Is "Off" | Turn Dockside Breaker "ON" |
| | Shore Power Cord Not Not Connected | Check Cord For Proper Connection |
| | Loose Or Disconnected Wires | Tighten Connection Contact Regal Dealer |
| No Power To AC Outlets & Equipment | Main AC Control Panel Tripped Or "Off" | Turn Breakers On Or Reset |
| | Shore Power Cord Not Connected | Check Cord: Plug In Power Cord |
| | Ground Fault Interrupter | Reset GFCI |
| | Equipment Cord Loose Or Not Connected | Plug In Equipment Cord |
| 30 Amp Main Breaker Continues To Trip Or Is Exceptionally Warm To The Touch | Faulty Main Breaker | Contact Dealer Or Electrician |

Troubleshooting

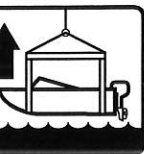
FRESH WATER DIAGNOSTIC CHART

| PROBLEM | POSSIBLE CAUSE | POSSIBLE FIX |
|---------------------------------------|-------------------------------|---|
| Air In System | Water Tank Empty | Fill Tank. With Pump On Bleed Air From Lines Until Water Flows Out Faucet |
| Fresh Water Pump Cycles On & Off | Leak In Water System | Locate Water Leak & Repair |
| No Water At Shower Or Sinks W/Faucets | Fresh Water Pump Breaker Off | Switch DC Breaker To "ON" position |
| | Water Tank Empty | Fill Water Tank |
| | Blocked/Pinched Line | Clear Obstruction Or Straighten Line |
| | Loose Or Disconnected Wire | Check Connections: Tighten As Needed Contact Your Dealer |
| Low Water Pressure | Defective Pump | Replace Pump: Call Your Regal Dealer |
| Low Water Pressure One Sink | Pinched Or Plugged Water Line | Straighten Or Blow At Out Line |



WASTE SYSTEM DIAGNOSTIC CHART

| PROBLEM | POSSIBLE CAUSE | POSSIBLE FIX |
|--|--|--|
| Head Not Flushing | Fresh Water Tank Empty | Fill Water Tank |
| | Seacock Closed | Open Seacock |
| | Breaker In "Off" Position | Turn Breaker "ON" |
| Head Not Emptying | Blocked Holding Tank Line | Unclog Line |
| Head Pump Making Loud Noise (Electric Head) | Dirt/Debris In Pump Body | Inspect Pump Body For Debris |
| Head Pump Runs Slow, Overheats, Or Blows Breaker | Loose Or Broken Electrical Wire | Tighten/Replace Wire |
| Head Pump Emits Odor | Loose Or Defective Pump Hose Connection | Tighten/Replace Hose Connection |
| | Worn/Torn Pump Diaphragm | Replace Diaphragm, Contact Your Dealer |
| Macerator Runs But Won't Pump Waste Overboard | Seacock In "OFF" Position | Open Seacock |
| Macerator Won't Run | Defective Pump, Faulty Wire, Tripped Breaker | Replace Pump, Wire, Or Reset Breaker |



Chapter 10

Storage

Storage or winter lay-up requires special preparation to prevent damage to the boat. Perform all annual maintenance at this time.

Without proper preparation, storage for long periods of time may cause internal parts of the engine and drive unit to rust because of lack of lubrication. Or, if the boat is stored in below freezing temperatures, water inside the bilge or cooling system may freeze causing damage. Damage to the boat due to improper storage will not be covered by the warranty. The following procedures should help prevent damage to your boat.

STORAGE PREPARATION

While The Boat Is Still In The Water

1. Fill fuel tank and add the proper amount of fuel stabilizer and conditioner according to the manufacturer's recommendations.
2. Operate boat for at least 15 minutes to be sure that treated fuel has reached engine.

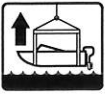
NOTICE

If the boat is to be stored for more than 5 months, stored in a high moisture (humidity) environment, in temperature extremes, or stored outdoors, "fog" the engine with a rust preventative fogging oil according to the manufacturer's recommendations. See your dealer.

When The Boat Is Removed From The Water

NOTICE

Remove the bilge drain plug immediately after taking the boat out of the water. After washing, raise the bow of the boat high to allow as much water as possible to drain while performing other storage preparations.



Chapter 10

- Flush the engine cooling system with clean water. DO NOT exceed 1500 rpm when flushing.
- Perform all scheduled maintenance. For stern drives, tuning the engine and changing the oil and fuel filters is especially important.
- Thoroughly clean the hull, deck and interior of the boat as soon as it is removed from the water. Cleaning at this time is easier because the marine growth is still wet. Be sure to allow for a couple of days of air drying to prevent mildew due to trapped moisture.
- Apply a coat of wax to the entire surface of the boat and rust inhibitor on all metal parts.
- Clean all traces of dirt, oil, grime, and grease from the engine and bilge. Touch-up areas of engine where paint has been removed.
- Prepare the engine for storage according to the instructions contained in the engine owner's manual.
- Store the bilge drain plug in a plastic bag and tape it to the throttle control lever so that it is easily found for reactivation.
- Remove the batteries from the boat. Clean, fully charge and store the batteries in an area not subject to freezing temperatures. Never store batteries close to heat, spark, or flame producing devices.
- Open all faucets and allow fresh water pump to empty water tank and intake lines. Run the pump dry for one or two minutes before turning it off.
- Open all drains, including the one on the water heater (if equipped).
- Empty holding tank for sanitary system, and flush with fresh water.
- Close inlet seacock. Remove inlet hose from pump housing and temporarily attach a short hose to the inlet. Pour one quart of nontoxic anti-freeze into container. With the open end of the temporary hose in the container, pump the head until the colored fluid runs down the rim of the bowl.
- Close outlet seacock.
- Remove strainer and seacock drain plugs to prevent damage from freezing. Close all seacocks.
- The boat bottom must be properly supported to prevent damage.

If stored on a trailer:

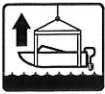
- Repack trailer wheel bearings with water resistant wheel bearing grease. If the trailer is equipped with bearing protectors, squirt grease into hubs with a grease gun.
- Park trailer and boat in a protected area. It is best to store boat on cradle. If the rig is left outside, install a boat cover. See your dealer.

Storage

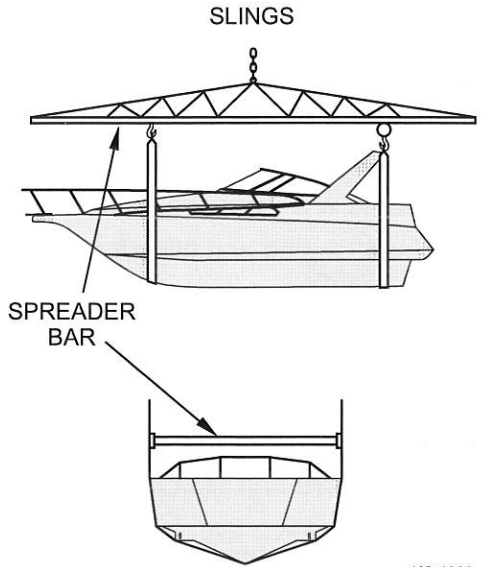
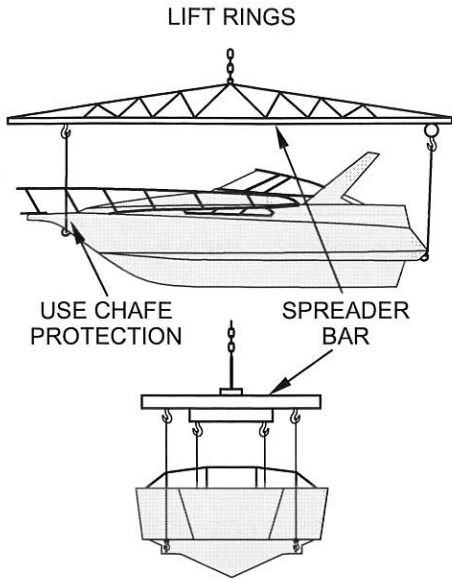
- Loosen tie-downs and winch line but be sure the boat is resting properly on hull supports.
- Jack up trailer and place blocks under trailer frame to relieve weight on trailer tires and springs.
- Refer to engine and boat accessory manuals for further storage instructions.

Reactivating The Boat After Storage

- Charge and install batteries in boat.
- Check engine and bilge for signs of nesting animals; clean as necessary.
- Check entire engine for cracks and leaks caused by freeze damage.
- Check hose condition and all hose clamps for tightness.
- Install bilge drain plug.
- Open and close all seacocks to check operation. Install all drain plugs in strainers and seacocks.
- Open all faucets and fill fresh water holding tank with about 20 gallons of water. Turn fresh water pump on to allow water to flow through faucets before closing them. Pump will run until operating pressure is reached. Fill fresh water tank until full.
- Perform daily maintenance. If not performed during lay-up, perform annual maintenance.
- If the boat is equipped with the optional fresh water cooling system (stern drive only) and was drained for storage, fill the system with fresh coolant solution.
- Check and lubricate steering system.
- Remove blocks from under trailer frame.
- Tighten tie-downs and trailer winch line.
- Check tire pressure and lug nuts on trailer.
- Take the boat to the water and start it. It may take a minute of cranking to allow the fuel system to prime. Allow a one minute cool down period for every 15 seconds of cranking. When the engine starts, keep a close watch over the gauge readings and check for leakage and abnormal noises. Keep speeds low for the first 15 minutes until the engine has reached normal operating temperature.
- Refer to engine and boat accessory manuals for further reactivation instructions.



SLINGING/LIFTING



KC-1866

If the boat is to be removed from the water without a trailer, follow these guidelines:

- Never attach lifting cables to cleats, ski tow eyes or hand rails. Attach cables only to the lifting eyes in the transom and bow.
- Cover lifting cables with rubber hose or other protectors to prevent damage to the finish.
- Attach guide lines to the bow and stern to control movement.
- Use spreader bars and keep lifting pressure vertical to prevent side load damage.
- Keep the bow slightly higher than the stern to prevent engine damage.



Chapter 11

Trailer

This section provides information about trailering. It describes the hitch and safety chains, backing your trailer, preparing to launch, launching, and loading your trailer. Also included is a trailering checklist.



WARNING

- **The trailer must be matched for the boat's weight and hull.**
- **The towing vehicle must have the capability of pulling the load.**

Pulling a load that exceeds the trailer's or vehicle's towing capacity may cause loss of control.

NOTICE

Check the certification label on the left forward side of your trailer. The label is required to show the Gross Vehicle Weight Rating (GVWR), which is the load carrying capacity plus the weight of the trailer itself. Be sure that the total weight of your boat, engine, gear, and trailer do not exceed the GVWR.

Trailer laws on things such as lighting, registration, trailer brakes, gross vehicle weight, etc., vary widely from state to state. Contact your state Department of Motor Vehicles (and that of other states through which you may be traveling) for laws with which you must be in compliance.



CLASSIFICATIONS

Trailers are separated into four classes based on gross vehicle weight (GVW). Gross vehicle weight equals the trailer weight plus the maximum load it may carry at 60 MPH.

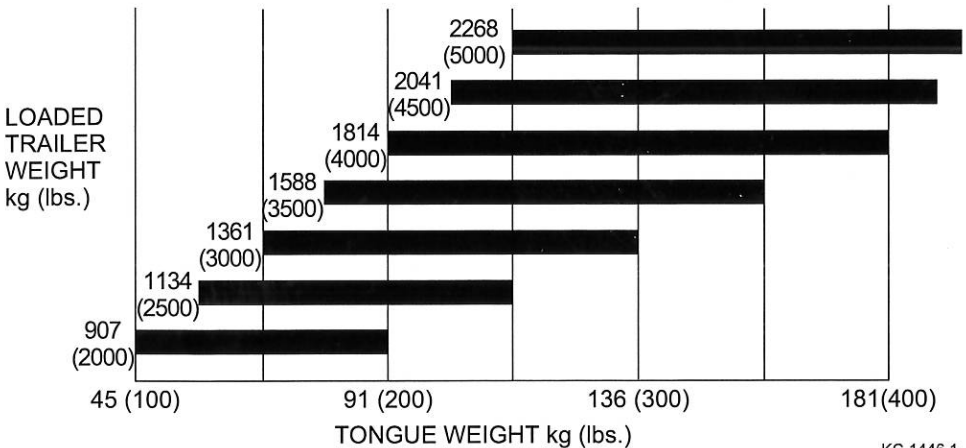
- Class One GVW under 907 kg (2000 lbs.)
- Class Two GVW over 907 kg (2000 lbs.) under 1588 kg (3500 lbs.)
- Class Three GVW over 1588 kg (3500 lbs.) under 2268 kg (5000 lbs.)
- Class Four GVW over 2268 kg (5000 lbs.)

HITCH

Hitches are divided into classes that specify the gross trailer weight (GTW) and maximum tongue weight for each class. Always use a hitch with the same class number as the trailer, or greater.

Most boat trailers connect to a ball hitch that is bolted or welded to the towing vehicle. Special heavy-duty equalizing hitches are necessary for trailer tongue weights of 159 kg (350 lbs.) or greater.

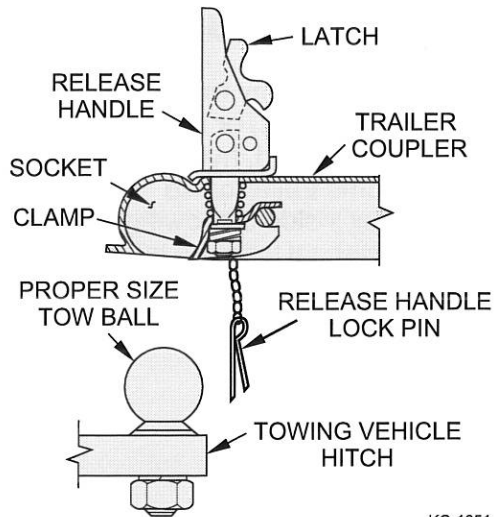
MAXIMUM TONGUE WEIGHT



Trailering

Most boat trailers connect to a ball hitch that is bolted or welded to the towing vehicle. Clamp-on bumper hitches are not recommended.

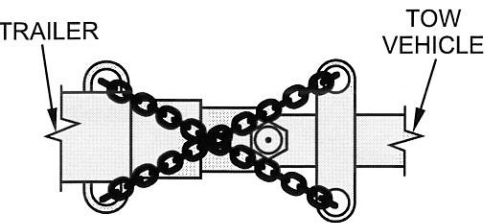
The trailer hitch coupler must match the size of the hitch ball. Never use a hitch ball that does not match the trailer coupler. The correct ball diameter is marked on the trailer coupler.



KC-1651

SAFETY CHAINS

CRISSCROSS SAFETY CHAINS



BOTTOM VIEW OF HITCH COUPLING

KC-1691

Safety chains on your boat trailer provide added insurance that it will not become completely detached from the towing vehicle when underway.

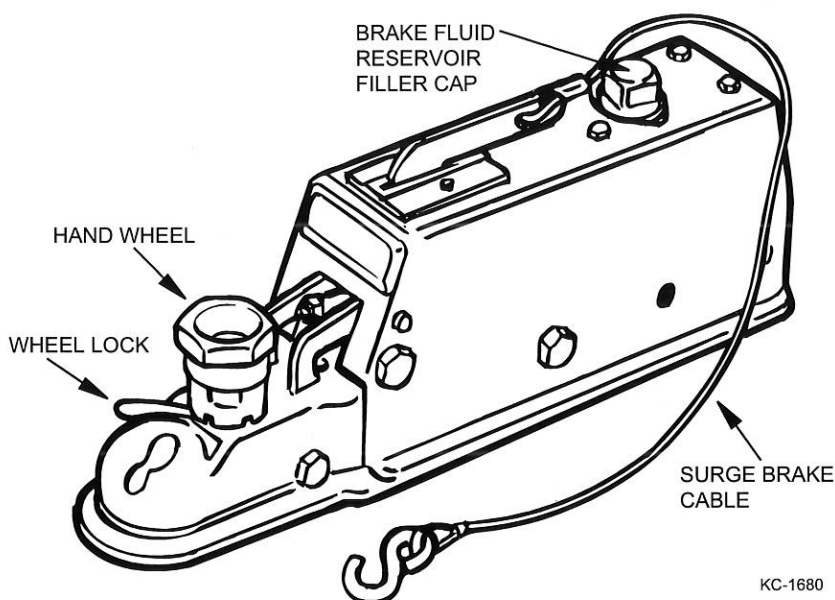
Crisscross the chains under the trailer tongue to prevent the tongue from dropping to the road if the trailer separates from the hitch ball. Rig the chains as tight as possible with just enough slack to permit tight turns.

Make sure the proper chains are correctly attached between the towing vehicle and trailer before and during each trip.



TRAILER BRAKES

In some states, any trailer with a gross vehicle weight rating (GVWR) of 680 kg (1,500 lbs.) or more is required to have brakes. Usually, this brake is a self-contained, hydraulic surge system, with either a drum or disk brake. Some trailer brake systems are electrically actuated and require a control box inside the towing vehicle. Consult your trailer manufacturer's owner's manual for more information on operation, adjustments and maintenance.



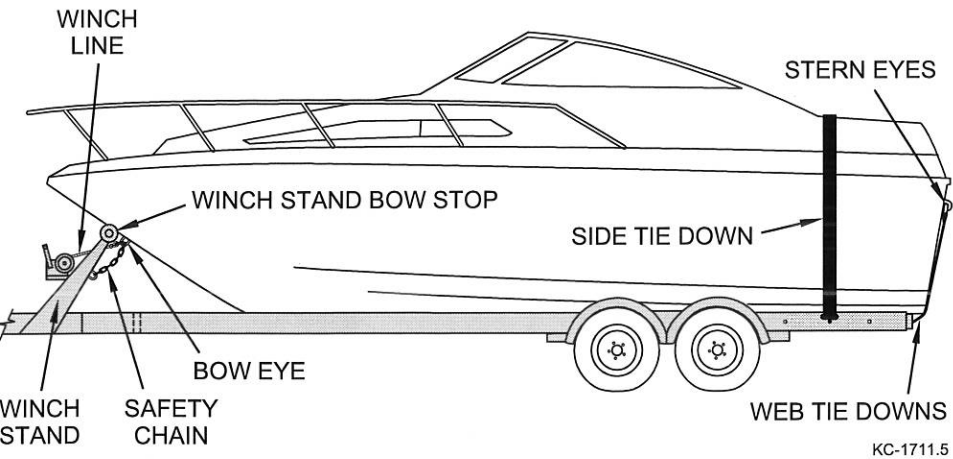
KC-1680

TRAILERING CHECKLIST

Below is a checklist to follow when trailering your boat:

- Consult your state laws as to brake and axle load requirements. Check brakes for proper operation and fluid level prior to departure on each trip.
- Check springs and undercarriage for loose parts.
- Check tires for proper inflation. Under-inflated tires heat up rapidly and tire damage or failure is likely to occur.
- Wheel bearings and lug nuts should be checked before each trip.

Trailering

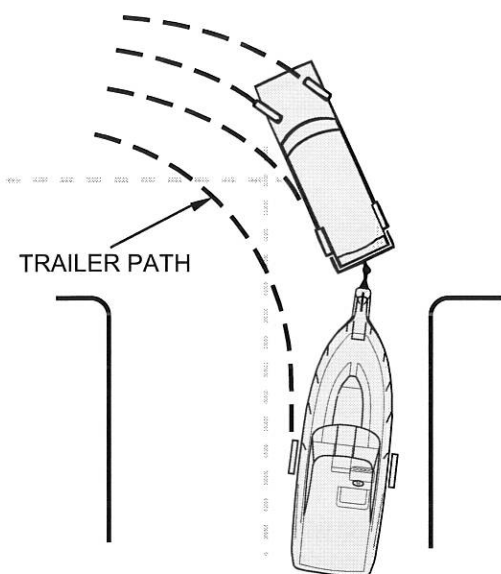


KC-1711.5

- ✓ Your boat should be fastened to the trailer with the winch line connected to the bow eye, PLUS a bow tie-down to the winch stand or trailer tongue. A safety chain, strap or rope can be used as a suitable tie down. The stern of your boat should be secured to the trailer from the stern eyes. If travel conditions require, use an additional tie-down strap across the rear of the boat from side-to-side to further secure the stern. Check all strapping material for wear.
- ✓ Check to be sure the taillights and turning signals work prior to towing.
- ✓ Too much or too little tongue weight will cause difficult steering and will make tow vehicle sway. A rough rule of thumb is 5% to 10% of boat and trailer weight on the tongue.
- ✓ Convertible tops and detachable windshields are not designed to stay on boats at highway speeds. Before towing, take down the convertible top, side curtains, back cover and detachable windshield if so equipped.
- ✓ Carry a spare tire for both your trailer and your towing vehicle along with sufficient tools to change them.
- ✓ Consult the engine operator's manual for engine related trailering precautions.
- ✓ On extended trips, carry spare wheel bearings, seals, and races.
- ✓ While traveling, check the wheel hubs every time you stop for gas or refreshments. If the hub feels abnormally hot, the bearing should be inspected before continuing your trip.



Chapter 11



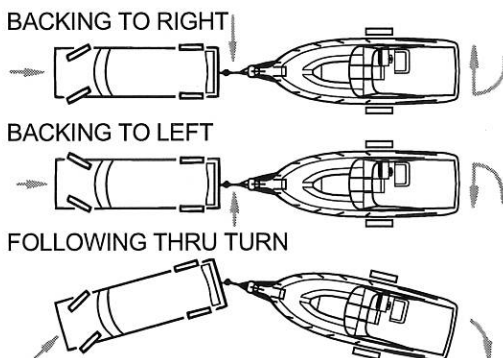
KC-1736

- ✓ When rounding turns on highways or streets, do not cut corners. Also, go slow over railroad tracks.
- ✓ Outboard motors should be tied in place so they will not tilt or turn due to road shock. Continuous road shocks may fatigue the boat steering system.
- ✓ Before backing your trailer into water, disconnect the light plug from the towing vehicle to reduce the likelihood of blowing out lights when they become submerged.

BACKING UP TRAILERS

If you have never towed a trailer before, take the time to practice backing your trailer before using it for the first time. Follow these guidelines when backing:

- Back slowly and make small steering adjustments.
- Turn the car wheels in the opposite direction you want the trailer to go.
- After the trailer begins moving, turn the car to follow it.
- Have a second person assist you with hand signals.



KC-1766

LAUNCHING

Before launching your boat, stay to one side and watch a couple of launchings to notice any problems on the ramp and the effects of the wind and current on launching. It is a common courtesy to prepare the boat for launching away from the ramp especially during busy periods. Perform the pre-launch sequence as follows:

1. Remove the boat cover, if equipped.
2. Check that bilge drain plug is in place.
3. Remove any additional trailering tie-downs from the boat.
4. Attach the bow and stern docking lines and fenders if necessary.
5. Disconnect the trailer lights from the car.

Launching with two people is recommended. Since all launches are different from each other in some way, the following procedure must be modified to fit the launch in use:

1. Back the boat down the ramp until the wheels are at least halfway submerged. Keep the trailer/car combination as straight as possible and at 90 degrees to the shore line.
2. Loosen and detach the bow strap from the bow eye.
3. Back the boat further down until the top of the fenders are about 50 mm (2 in.) above the water.
4. Board the boat and start it. If possible, remain on the trailer until the engine has warmed-up.

LOADING

Loading, like launching, is best done with two people:

1. Back the trailer into the water until the top of the fenders are about 75 mm (3 in.) above the water. Keep the trailer/car combination as straight as possible and, if possible, at 90 degrees to the shoreline. Set the parking brake securely.
2. Approach the trailer in a straight line from at least 1.5 m (5 ft.) out. Use "bursts" of propeller thrust to move towards the trailer at the slowest steerable speed. Guide the boat onto the support bunks.
3. Check to see that the boat is centered on the support rails and is headed in a straight line for the bow stop (bumper board).



WARNING

Excessive throttle can cause the boat to travel over the bumper board causing extensive damage to the boat, trailer, and car and could cause severe personal injury.

4. Using a very light touch on the throttle, ease the boat forward until the bow comes to rest against the bow stop (bumper board).

CAUTION

The winch bow strap is merely a means of securing the boat to the trailer and is not intended to winch or pull the boat onto the trailer. Winching the boat onto the trailer could cause severe injury.

5. Attach and tighten the winch bow strap.
6. Pull the trailer up the ramp and attach any additional tie-downs and connect the trailer light harness.
7. Pull drain plug.

Chapter 12

Glossary of Terms

ABOARD – On or in the boat.

AFLLOAT – On the water.

AFT – Toward the rear or stern of the boat.

AGROUND – Touching bottom.

AMIDSHIP – Center or middle of the boat.

ANCHOR – (1) An iron casting shaped to grip the lake bottom to hold the boat. (2) The act of setting the anchor.

ASHORE – On the shore.

ASTERN – Toward the stern.

BAIL – To remove water from the bottom of the boat with a pump, bucket, sponge, etc.

BAITWELL – A miniature livewell used to store and keep live bait alive and healthy.

BEAM – The widest point on the boat.

BEARING – Relative position or direction of an object from the boat.

BILGE – The lowest interior section of the boat hull.

BILGE KEELS – The raised areas or aluminum extrusions on the bottom of a boat that parallel the keel.

BOARDING – To enter the boat.

BOUNDARY WATERS – A body of water between two areas of jurisdiction; i.e., a river between two states.

BOW – The front of the boat.

BULKHEAD – Vertical partition (wall) in a boat.

BUNKS – Carpeted trailer hull supports.

BURDENED BOAT – Term for the boat that must "give-way" to boats with the right-of-way.

CAPACITY PLATE – A plate that provides maximum weight capacity and engine horsepower rating information. It is located in full view of the helm.

CAPSIZE – To turn over.

CAST-OFF – To unfasten mooring lines in preparation for departure.

CENTER LINE – A lengthwise imaginary line which runs fore and aft with the boat's keel.

CHINE – The point on a boat where the side intersects (meets) the bottom.

CLEAT – A deck fitting with ears to which lines are fastened.

CONSOLE – Also called helm. The steering wheel area of the boat.

CRANKING BATTERY – The main battery used for engine starting and electrical circuits.

CURRENT – Water moving in a horizontal direction.

DECK – The open surface on the boat where the passengers walk.

DEEP CYCLE BATTERIES – Special long-running batteries which can be repeatedly discharged and recharged without significant loss of power.

DOLLY WHEEL – A rolling jack assembly at the front of the trailer used for positioning the coupler during trailer hookup.

DRAFT – The depth of the boat below the water line, measured vertically to the lowest part of the hull.

ELECTROLYSIS – The break-up of metals due to the effects of galvanic corrosion.

FATHOM – Unit of depth or measure; 1 fathom equals 6 feet.

Chapter 12

FENDERS – Objects placed alongside the boat for cushioning. Sometimes called bumpers.

FORE – Toward the front or bow of the boat. Opposite of aft.

FREEBOARD – The distance from the water to the gunwale.

FUEL SENDING UNIT – The electrical device that is mounted on the outside of a built-in fuel tank and controls the dashboard fuel gauge.

GIVE-WAY BOAT – (1) Term for the boat that must take whatever action necessary to keep well clear of the boat with the right-of-way in meeting or crossing situations. (2) The burdened boat.

GUNWALE – The rail or upper edge of a boat's side.

HEAD – A marine toilet.

HELM – The steering wheel or command area.

HULL – The body of the boat.

HYPOTHERMIA – A physical condition where the body loses heat faster than it can produce it.

IN-LINE FUSE – A type of protective fuse located in the power wire of a direct current (DC) circuit usually near the battery.

KEEL – The lowest portion of the boat; extends fore and aft along the boat's bottom.

LIST – Leaning or tilt of a boat toward the side.

MAKING WAY – Making progress through the water.

MARINE-CHART – Seagoing maps showing depths, buoys, navigation aids, etc.

MOORING – An anchor, chain, or similar device that holds a boat in one location.

NAVIGATION AID – Recognizable objects on land or sea such as buoys, towers or lights which are used to fix position to identify safe and unsafe waters.

NO-WAKE SPEED – The speed at which a boat travels to produce an imperceptible wake.

PFD – Personal flotation device.

PITOT TUBE – See SPEEDOMETER PICKUP TUBE.

PLANING HULL – A hull designed to lift, thereby reducing friction and increasing efficiency.

PORPOISE – A condition in which the bow bounces up and down caused by trimming the engine too far out.

PORT – (1) The left side of a boat when facing the bow. (2) A destination or harbor.

PRIVILEGED BOAT – Term used for the boat with the right-of-way.

RIGHT-OF-WAY – Term for the boat that has priority in meeting or crossing situations. The stand on or privileged boat.

RULES OF THE ROAD – Regulations for preventing collisions on the water.

SPEEDOMETER PICKUP TUBE – Also called pitot tube. The plastic device that extends below the bottom of the boat. It connects to the speedometer with plastic flexible tubing.

SPLASHWELL – The section of an outboard-equipped boat that is just forward of the transom.

STAND ON BOAT – Term for the boat that must maintain course and speed in meeting or crossing situations. The privileged boat.

STARBOARD – The right side of the boat when looking towards the bow.

STERN – The back of the boat.

STOW – To pack the cargo.

SURGE BRAKES – A type of trailer braking system designed to automatically actuate when the tow vehicle's brakes are applied.

TRANSDUCER – The unit that sends/receives signals for the depth sounder.

TRANSOM – The transverse beam across the stern.

TRIM – Fore to aft and side to side balance of the boat when loaded.

UNDERWAY – Boat in motion; i.e., not moored or anchored.

USCG – United States Coast Guard

WAKE – The waves that a boat leaves behind when moving through the water.

WATERWAY – A navigable body of water.

V-PAD – A modified vee hull design with a small, flat area in the keel aft.

VISUAL DISTRESS SIGNAL – A device used to signal the need for assistance such as flags, lights and flares.

SAMPLE FLOAT PLAN

Copy this page and fill out the copy before going boating. Leave the filled out copy with a reliable person who can be depended upon to notify the Coast Guard, or other rescue organization, should you not return as scheduled. DO-NOT-file this plan with the Coast Guard.

Name _____ Telephone _____

Description of Boat: Type _____ Color _____ Trim _____

Registration Number _____

Length _____ Name _____ Make _____

Other Info. _____

Persons Aboard: Name Age Address & Telephone

Engine Type: _____ HP _____

No. of Engines: _____ Fuel Capacity: _____

Survival Equipment:

PFDs _____ Flares _____ Mirror _____

Smoke Signals _____ Flashlight _____ Food _____

Paddles _____ Water _____ Anchor _____

Raft or Dinghy _____ EPIRB _____

Radio: Yes ___ No ___ Type _____ Freq _____

Destination _____ Est. Time of Arrival _____

Expect to Return By _____

Auto Type _____ License No. _____ Parked _____

If not returned by _____ call the Coast Guard, or _____

Local Authority). Coast Guard Telephone Number: _____

Local Authority Telephone Number: _____



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